

JORNADA POST EAHP

El Farmacéutico Clínico

Pablo March López



Índice

1.We have a dream

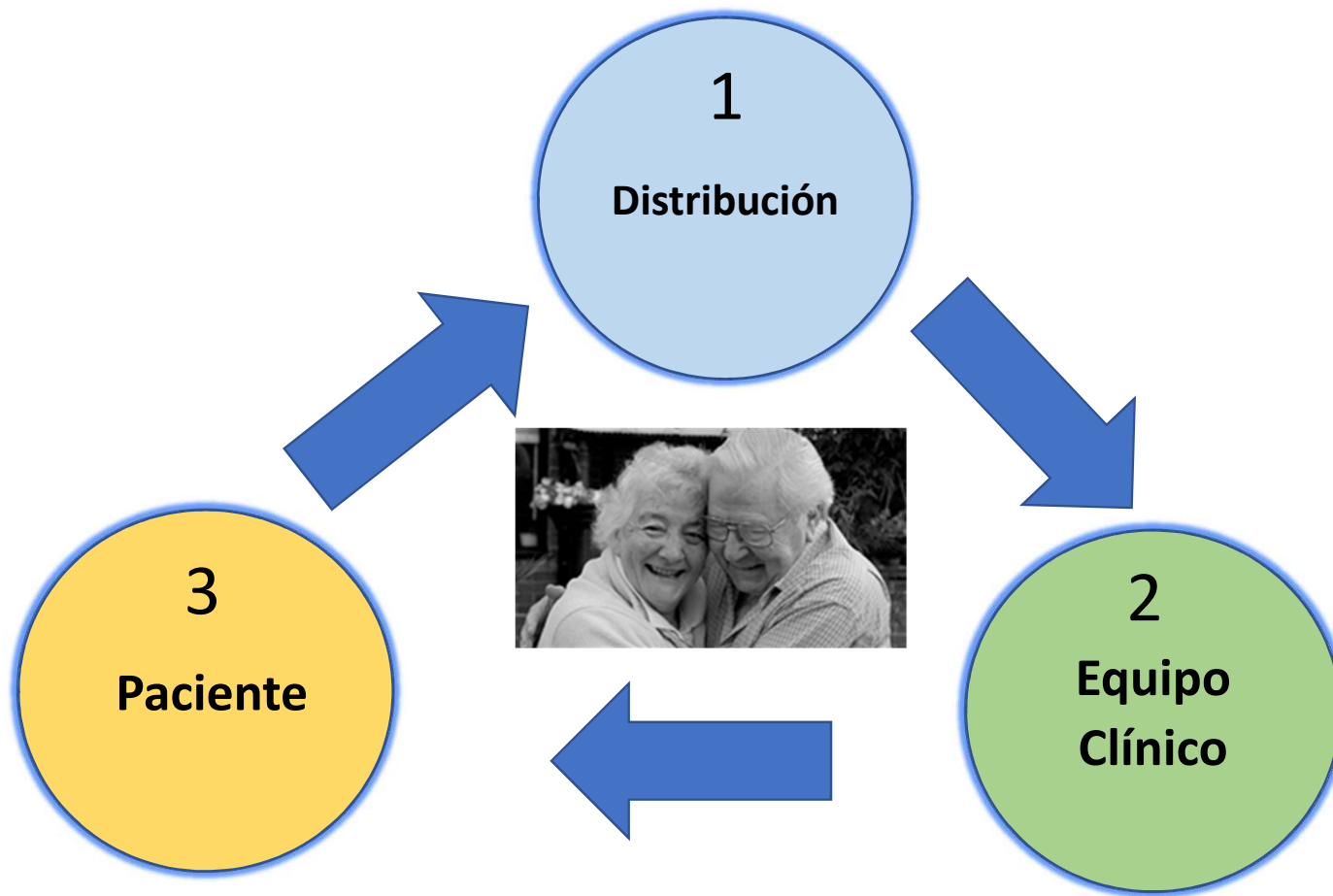
2.Managing Polypharmacy

3.Antimicrobial Stewardship

4.Workshop Check of Medication Appropriatness (CMA)

El Farmacéutico Clínico

1. We have a dream:



We have a dream

Cheryl McKay
Director
KayHill Consulting

Jonathan Underhill
Consultant clinical adviser, NICE, UK
Head of Medicines Optimisation
Keele University School of Pharmacy

2.Managing Polypharmacy:



Managing Polypharmacy: Thinking outside the box

Martin Wilson
Consultant Physician
Care of the Elderly
NHS Highland

Clare Morrison
Lead Pharmacist (North)
Senior Quality Clinical Lead
NHS Highland



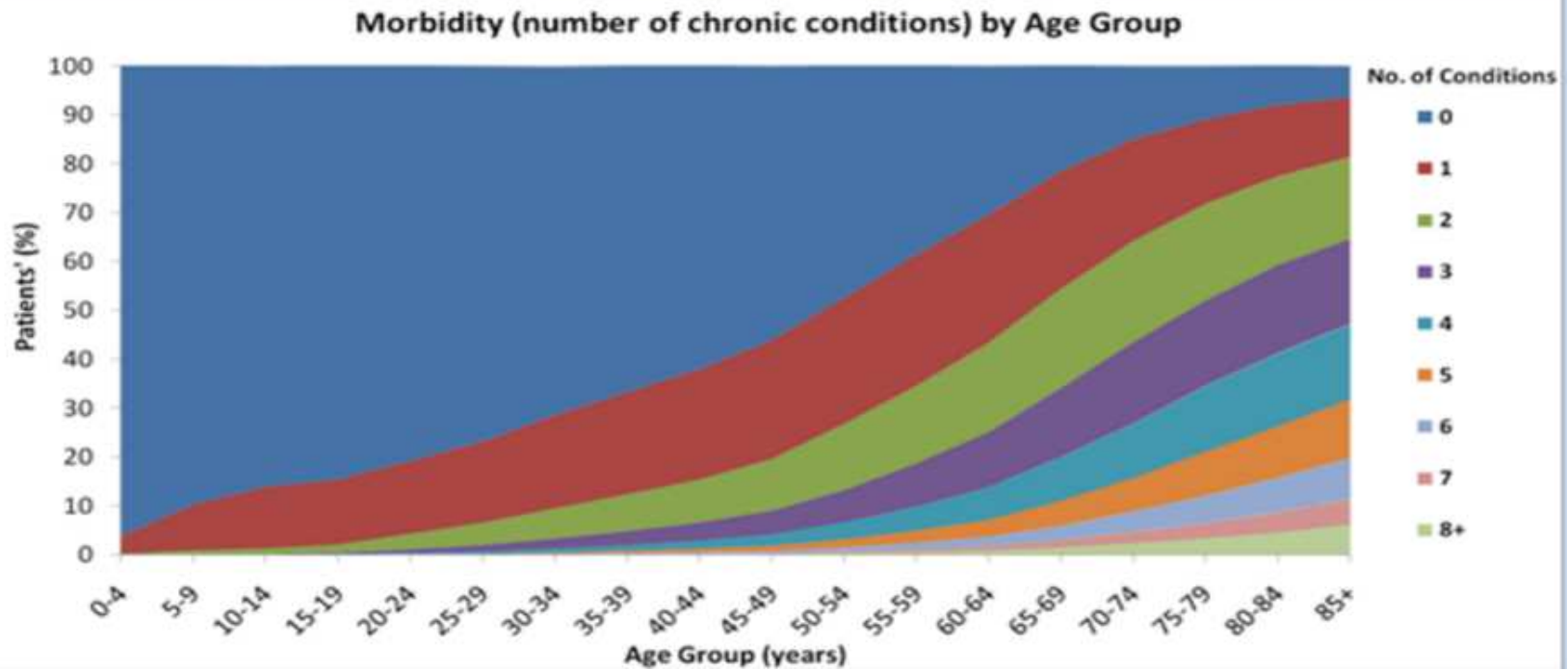
2.Managing Polypharmacy: Martin Wilson

Multimorbilidad

Fragilidad

Polifarmacia

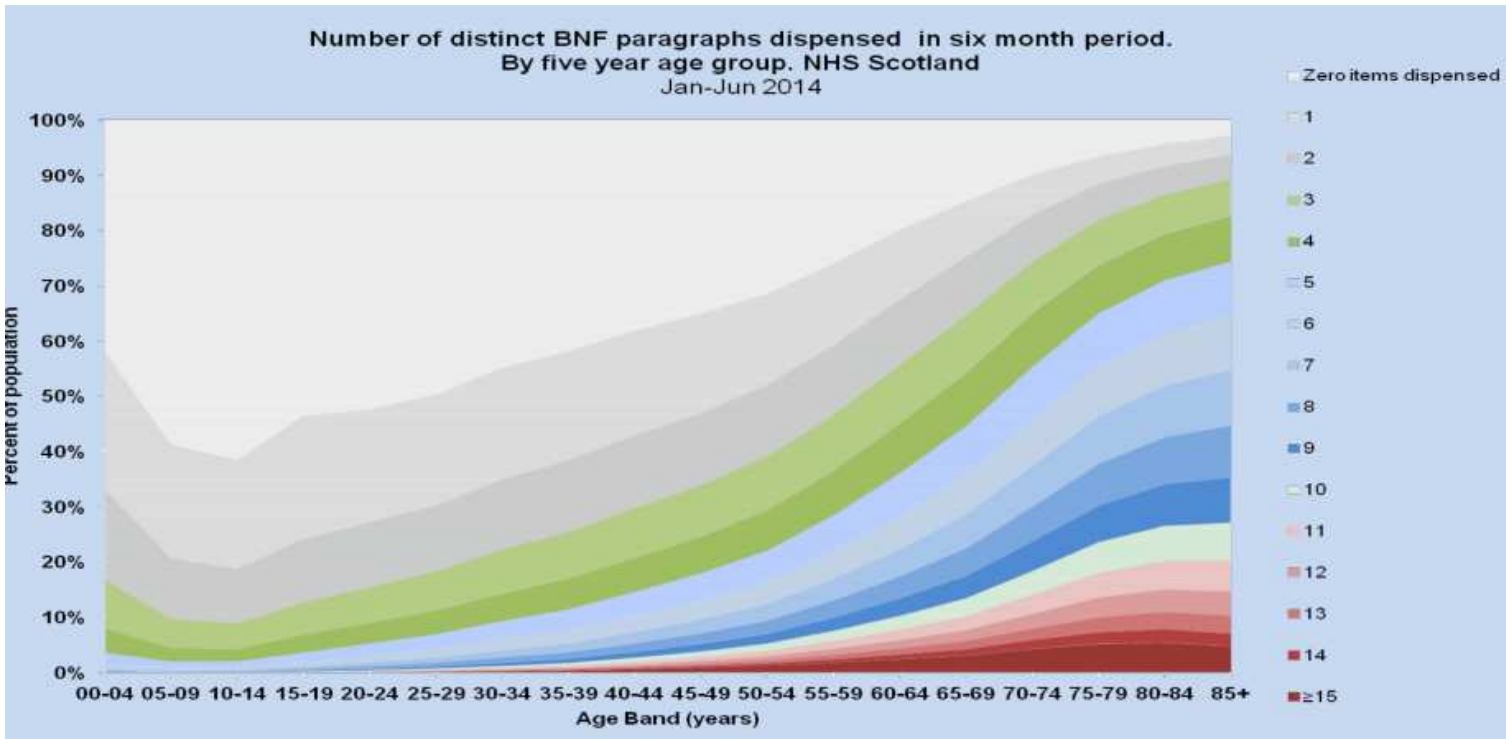
Multimorbidity is common





Polifarmacia

Las guías las diseñan
paciente no
polimedicados



2. Managing Polypharmacy: Martin Wilson

Fragilidad



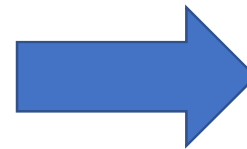
A pesar de estar bien
cuanto más mayor se
van acabando las
reservas fisiológicas...

2.Managing Polypharmacy: Martin Wilson

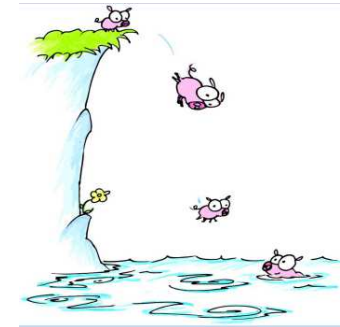
¿Estamos preparados para los pacientes crónicos complejos?

GUÍAS CLÍNICAS

- Pensando en sólo una patología
- Estudios en pacientes no frágiles
- Sin mentalidad de paciente frágil o multimorbilidad
- Asumiendo pacientes de características similares



Complicado
llevarles la
contraria



2.Managing Polypharmacy: Martin Wilson



NNT: Te muestra el grupo de pacientes en el ensayo, evaluar si tu paciente se asemeja

2.Managing Polypharmacy: Martin Wilson

EN RESUMEN

1. Identificar Objetivos
2. Identificar Medicación Esencial
3. Identificar Medicación Innecesaria
4. Infra tratamiento
5. Chequeo de Seguridad
6. ¿Puede tomar/Pagarlo?
7. ¿Saben por qué lo toman y están de acuerdo?



2.Managing Polypharmacy: Clare Morrison



Hospital

Residencia Geriátrica

Hogar

Oficina de Farmacia

2.Managing Polypharmacy: Clare Morrison

High risk medicines		High risk medicines	
NSAID plus	ACE inhibitor/ARB & Diuretic (triple whammy) eGFR <60 Heart failure Warfarin Age >75 without PPI	Heart failure plus	Glitazone NSAID Tricyclic antidepressant
Warfarin plus	Antiplatelet NSAID Macrolide Quinolone Metronidazole Azole antifungal	Frailty plus	Digoxin >250mcg Antipsychotic Tricyclic antidepressant Benzodiazepine Anticholinergic Phenothiazine Combination analgesic

From a population of 38,399 patients	
Number of patients taking a high risk medicine	3,643
Pharmacist recommend to stop/amend medicine	440
GP agreement to recommendation	214

Follow up after one year – number of adverse outcomes	
Group following pharmacist recommendation	0
Group not following pharmacist recommendation	22 of which: 21 preventable 3 admissions

Drugs - Real World Outcomes
DOI 10.1007/s40801-015-0031-8

ORIGINAL RESEARCH ARTICLE

Promoting Safer Use of High-Risk Pharmacotherapy: Impact of Pharmacist-Led Targeted Medication Reviews

Clare Morrison¹ • Yvonne MacRae²



2.Managing Polypharmacy: Clare Morrison

Medicine sick day rules

Medicine Sick Day Rules

When you are unwell with any of the following:

- Vomiting or diarrhoea (unless only minor)
- Fevers, sweats and shaking

Then STOP taking the medicines listed overleaf

Restart when you are well (after 24-48 hours of eating and drinking normally)

If you are in any doubt, contact your pharmacist, GP or nurse

Medicines to stop on sick days

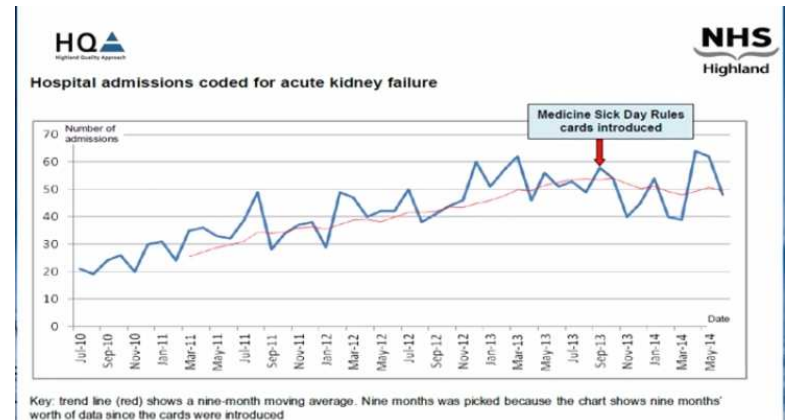
ACE inhibitors: medicine names ending in "pril"
eg. lisinopril, perindopril, ramipril

ARBs: medicine names ending in "sartan"
eg. losartan, candesartan, valsartan

NSAIDs: anti-inflammatory pain killers
eg. ibuprofen, diclofenac, naproxen

Diuretics: sometimes called "water pills"
eg. furosemide, spironolactone, indapamide, bendroflumethiazide

Metformin: a medicine for diabetes



2.Managing Polypharmacy: Clare Morrison

¿Farmacéutico Transversal
centrado en PCC?



Farmacéutico
Atención Primaria

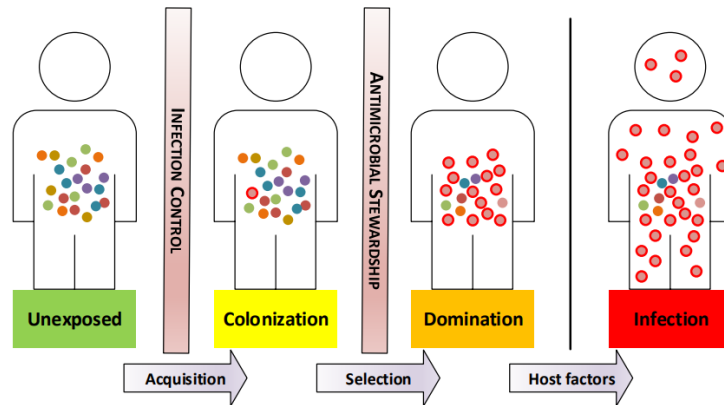
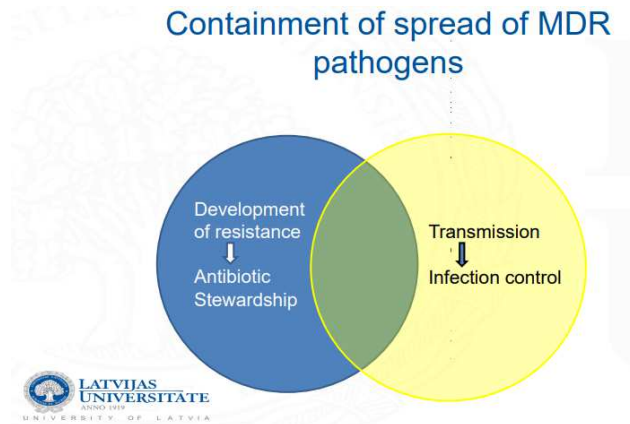
Actividad:

- Revisión Semestral
- Teleconsulta (webcam)
- Acceso remoto a los datos clínicos
- 31% Prescriben

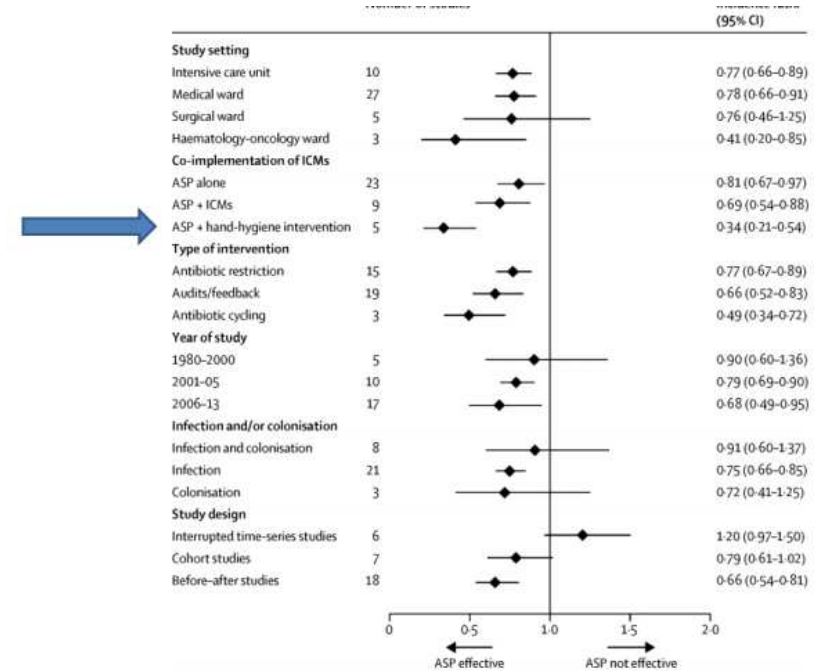
ZONAS RURALES

Farmacéutico
Hospitalario

3. Antimicrobial Stewardship: Uga Dumpis



PILGRIM study proposal

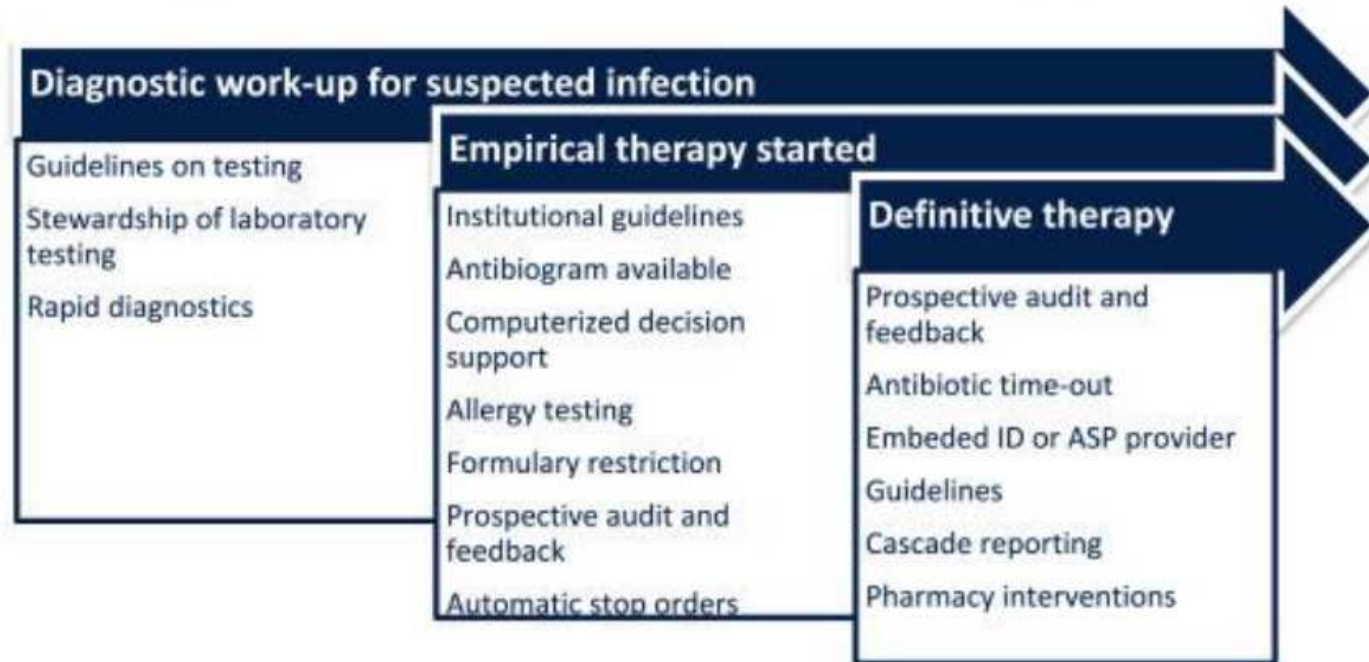


Baur D. Systematic review 2017 Lancet Infectious Diseases

Uga Dumpis MD PhD
Pauls Stradins Clinical University Hospital
University of Latvia

3. Antimicrobial Stewardship: Uga Dumpis

Opportunities antibiotic stewardship policies



Doernberg SB et al, 2017 Infectious Disease Clinics of Northern America

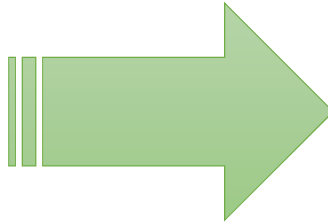
¿Por dónde empezar?

- Solucionar problemas Sencillos
- Equipos Multidisciplinar
- Donde más margen de mejora haya.
- Mayor potencial (UCI, hematología, trasplantes)
- Equipos pequeños
- Lugar amigable
- Presencia (no sólo email/tfo)
- Monitorizar resultados

3. Antimicrobial Stewardship: Uga Dumpis

Planificación

- Apoyo administrativo
- Creación del equipo
- Monitorizar
- Elegir indicadores
- Feedback



Point prevalence approach

- One day, one clinical unit
- All patients on antibiotics/all patients
 - Patient demographics
 - Reason for antibiotics
 - Antibiotic
 - Dose

3.Antimicrobial Stewardship: Uga Dumpis



European Prevalence Survey of Healthcare-Associated Infections and Antimicrobial Use Form A. Patient-based data (standard protocol)

Patient data (to collect for all patients)

Hospital code:
Ward name (abbr.)/Unit Id: Ward specialty:
Survey date: / / (dd/mm/yyyy)
Patient Counter:
Age in years: yrs; Age if < 2 year old: months
Sex: M F Date of hospital admission: / / (dd/mm/yyyy)
Consultant/Patient Specialty:
Surgery since admission:
☐ No surgery ☐ Minimal invasive/non-NHSN surgery
☐ NHSN surgery ☐ Unknown
McCabe score:
☐ Non-fatal disease
☐ Ultimately fatal disease
☐ Rapidly fatal disease
☐ Unknown
Central vascular catheter: ☐ No ☐ Yes ☐ Unk
Peripheral vascular catheter: ☐ No ☐ Yes ☐ Unk
Urinary catheter: ☐ No ☐ Yes ☐ Unk
Intubation: ☐ No ☐ Yes ☐ Unk
Patient receives antimicrobial(s)⁽¹⁾: ☐ No ☐ Yes
Patient has active HAI⁽²⁾: ☐ No ☐ Yes

(1) At the time of the survey, except for surgical prophylaxis 24h before 8:00 AM on the day of the survey; if yes, fill antimicrobial use data; (2) Infection with onset $\geq$ Day 3, OR SSI criteria met (surgery in previous 30d/1yr), OR discharged from acute care hospital <48h ago, OR CDI and discharged from acute care hospital <28 days ago OR onset < Day 3 after invasive device/procedure on D1 or D2) AND HAI case criteria met on survey day OR patient is receiving (any) treatment for HAI AND case criteria are met between D1 of treatment and survey day; if yes, fill HAI data

Antimicrobial (generic or brand name)	Route	Indication	Diagnosis (see)	Reason in notes

Route: P: parenteral, O: oral, R: rectal, I: inhalation; Indication: CI - LI - HI: treatment intention for community-acquired (CI), long/intermediate-term care-acquired (LI) or acute hospital-acquired infection (HI); surgical prophylaxis: SP1: single dose, SP2: one day, SP3: >1 day; MP: medical prophylaxis; O: other; UI: Unknown indication; Diagnosis: see site list, only for treatment intention Reason in notes: Y/N

	HAI 1	HAI 2	HAI 3
Case definition code			
Relevant device in situ before onset ⁽³⁾	☐ Yes ☐ No ☐ Unknown	☐ Yes ☐ No ☐ Unknown	☐ Yes ☐ No ☐ Unknown
Present at admission	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Date of onset ⁽⁴⁾	/ /	/ /	/ /
Origin of infection	☐ current hospital ☐ other hospital ☐ other origin/ unk	☐ current hospital ☐ other hospital ☐ other origin/ unk	☐ current hospital ☐ other hospital ☐ other origin/ unk
If BSI: source ⁽⁵⁾			
	MO-code R ⁽⁶⁾	MO-code R ⁽⁶⁾	MO-code R ⁽⁶⁾
Microorganism 1			
Microorganism 2			
Microorganism 3			

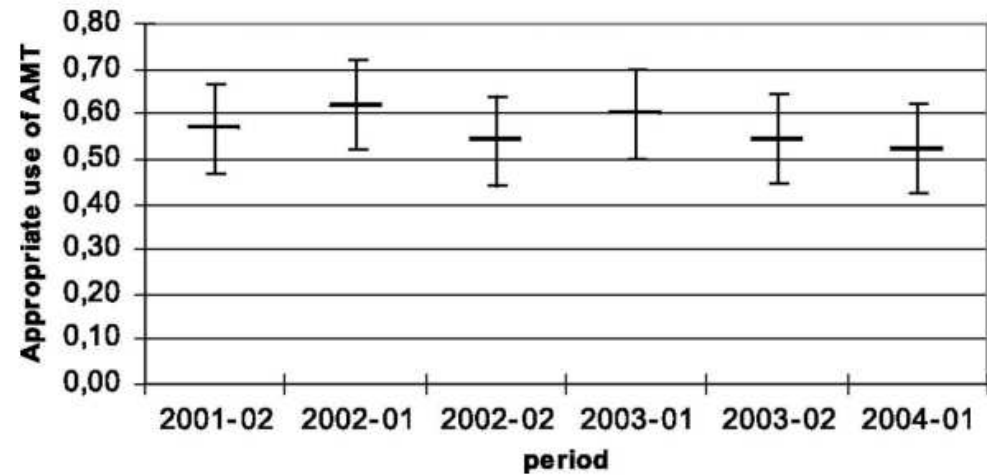
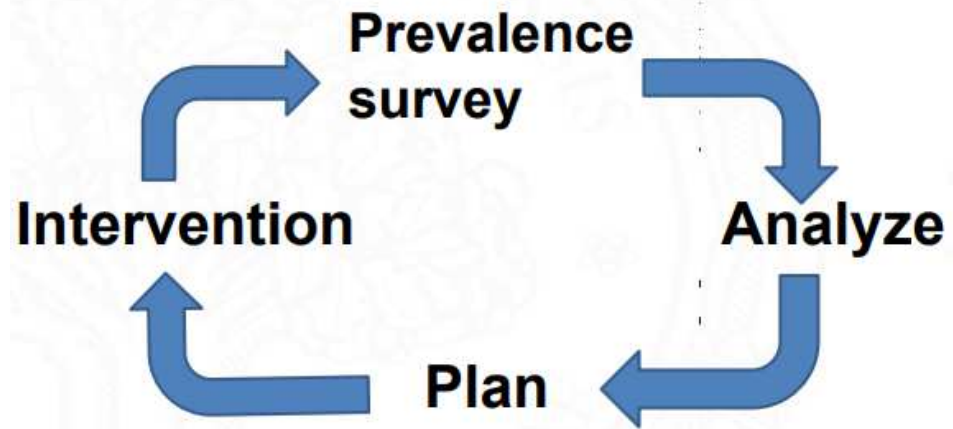
(3) relevant device use (intubation for PN, CVC for BSI, urinary catheter for UTI) in 48 hours before onset of infection (even intermittent use), 7 days for UTI; (4) Only for infections not present/active at admission (dd/mm/yyyy); (5) C-CVC, C-PVC, S-PUL, S-UTI, S-DIG, S-SSI, S-SST, S-OTH, UD, UNK; (6) AMR marker 0,1,2 or 9, see table

GLOBAL-PPS PATIENT Form (Please fill in one form per patient on antimicrobial treatment/prophylaxis)

Ward Name/code	Activity ¹ (M, S, IC)	Patient Identifier ²	Survey Number ³	Patient Age ⁴			Gender
				Years (if $\geq$ 2 years)	Months (1-23 month)	Days (if <1 month)	M or F
Antimicrobial Name ⁵	1.	2.	3.	4.	5.		
Single Unit Dose ⁶	Unit (g, mg, or IU) ⁷						
Doses/ day ⁸	Route (P, O, R, I) ⁹						
Diagnosis ¹⁰ (see appendix II)							
Type of indication ¹¹ (see appendix III)							
Reason in Notes (Yes or No) ¹²							
Guideline Compliance (Y, N, NA, NI) ¹³							
Is a stop/review date documented? (Yes or No)							
Treatment (E: Empirical; T: Targeted)							
Treatment based on biomarker data (Yes or No) ¹⁴							
If yes, on which biomarker ¹⁵ (fill in: CRP, PCT or other)							
Targeted treatment choice based on microbiology data (Yes, No) ¹⁶							
IF YES: (This section is to be filled in only if the treatment choice is based on microbiology data AND the organism is one of the following)							
MRSA (Yes or No) ¹⁷							
MRCoNS (Yes or No) ¹⁸							
VRE (Yes or No) ¹⁹							
ESBL-producing Enterobacteriaceae (Yes or No) ²⁰							
3rd generation cephalosporin resistant Enterobacteriaceae non-ESBL producing							

Gratuitos
Realiza gráficos, análisis

3. Antimicrobial Stewardship: Uga Dumpis



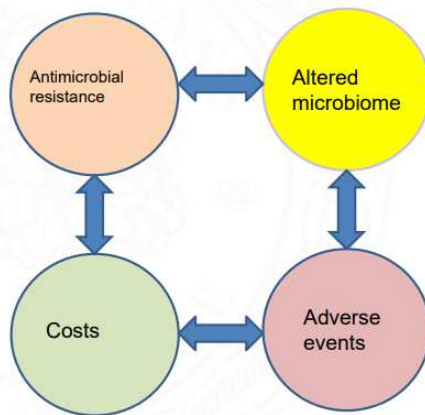
Ina Willemsen et al. Antimicrob. Agents Chemother.
2007;51:864-867

Antimicrobial Agents and Chemotherapy

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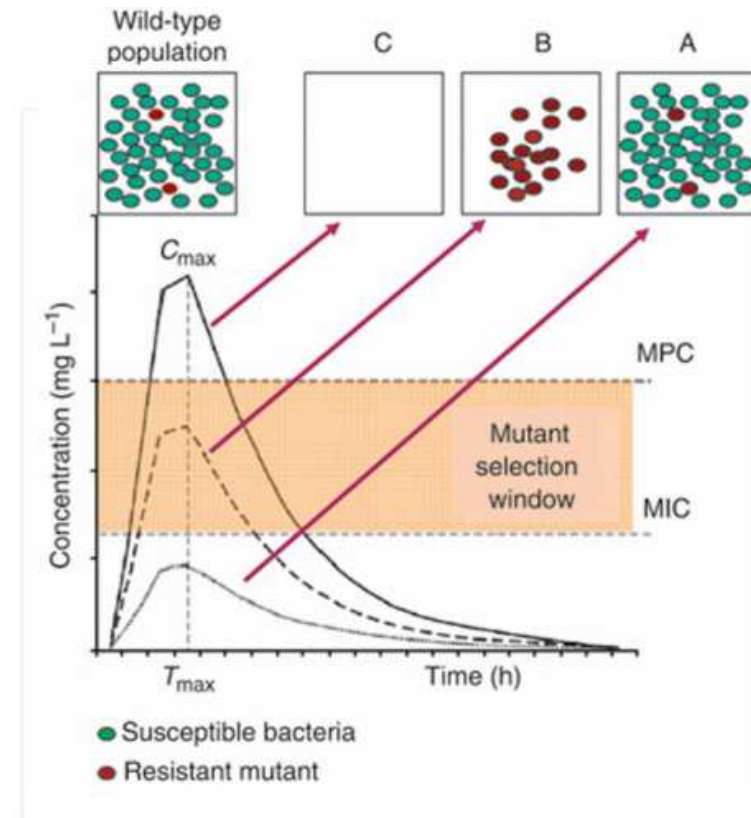
3. Antimicrobial Stewardship: Uga Dumpis

What are the harms of inappropriately prolonged antibiotic therapy?



When the antibiotic treatment should be stopped

- When the benefit to the patient (but also for society) no longer outweighs the potential harm



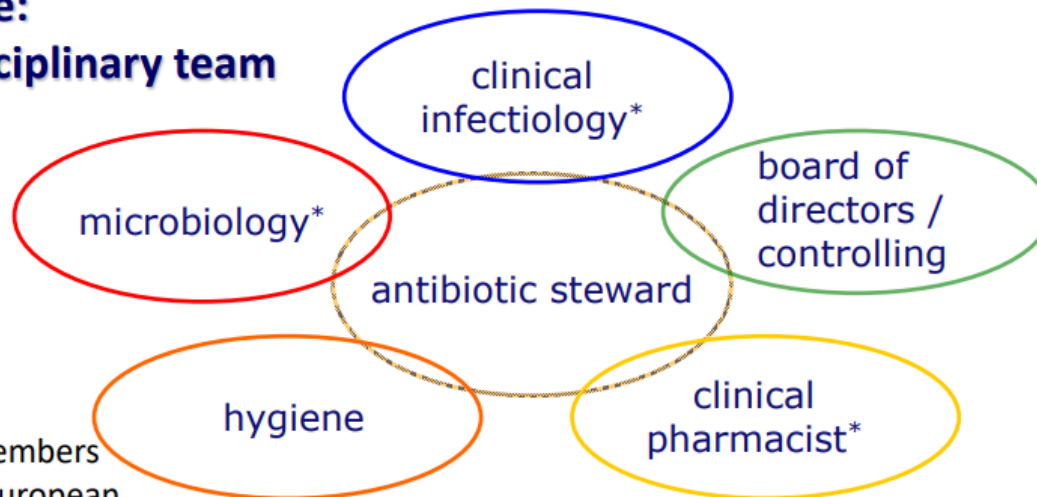
Emergence and spread of antibiotic resistance following exposure to antibiotics
FEMS Microbiol Rev. 2011;35(5):977-991. doi:10.1111/j.1574-6976.2011.00295.x

3. Antimicrobial Stewardship: Dr Thern



at UKSH, Campus Lübeck

**Structure:
multidisciplinary team**



* Key team members
according to European
guideline

courtesy Evelyn Kramme, Luebeck

Dr. Thern: Antibiotic Stewardship
Department of Pharmacy
University hospital Schleswig Holstein,
Campus Lübeck
Germany

3. Antimicrobial Stewardship: Dr Thern

Papel del Farmacéutico Dosificación

- Dosis
- Modo de administración
- Frecuencia



European Centre for Disease Prevention and Control

An agency of the European Union

Infectious diseases & public health

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Home > Publications & data > Directory: Guidance on prevention and control > Antimicrobial stewardship

< Directory: Guidance on prevention and control

Antimicrobial stewardship

Carbapenem-resistant Enterobacteriaceae (CRE)

Clostridium difficile

Hand hygiene

Infections during endoscopic procedures

Methicillin-resistant Staphylococcus aureus (MRSA)

Organisation of infection prevention and control

Peri-operative antimicrobial prophylaxis

Projects: Antimicrobial resistance and healthcare-associated infections

Antimicrobial stewardship



EUROPE

EUROPEAN COMMISSION

- Commission Notice - EU Guidelines for the prudent use of antimicrobials in human health (2017/C 212/01) (European Commission, 2017) <#>

AGENCIES

US CENTERS FOR DISEASE CONTROL AND PREVENTION (CDC) / EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL (ECDC)

- Structure and process indicators for hospital antimicrobial stewardship programs (Transatlantic Task Force on Antimicrobial Resistance, 2015) [Summary the modified Delphi process for common structure and process indicators for hospital antimicrobial stewardship programs](#) <#>

US CENTERS FOR DISEASE CONTROL AND PREVENTION (CDC)

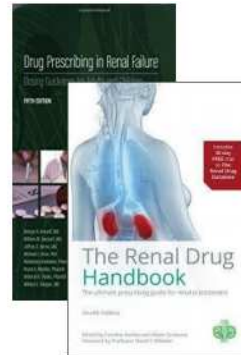
accessed: Feb 11, 2018

3. Antimicrobial Stewardship: Dr Thern

|A|B|S| Role of the pharmacist antibiotic stewardship

➤ Renal dosing

- Literature search, e.g. in
 - ▶ tertiary literature, examples ⇒
 - ▶ primary literature (e.g. dosing for specific dialysis mode)



edited by Ashley C,
Dunleavy A.

➤ obesity dosing

- Recommendation of a dose
 - “One size fits all”: Not for all antibiotics
 - No uniform approach, dosing may be based on
 - Standard dosing
 - Total body weight (e.g. for daptomycin)
 - Adjusted body weight (e.g. for aminoglycosides, but conflicting data)
 - Ideal body weight (e.g. for CMS)

3. Antimicrobial Stewardship: Dr Thern

Tools for TDM

e.g. calculators by clinical.com

Vancomycin Calculator

Advanced vancomycin pharmacokinetics tool

ClinCalc.com » Infectious Disease » Vancomycin Calculator

Patient Parameters

Body weight: kg lbs

Volume of distribution (Vd): L/kg

Therapeutic goal:

Recommend loading dose:

Elimination Constant (Kel)

Height: in cm

<http://clincalc.com/vancomycin/>

Prolonged infusions

- Intermittent infusion
- Extended infusion
- Continuous infusion

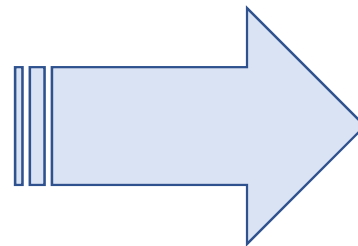


details e.g. in Sanford guide to antimicrobial therapy

3. Antimicrobial Stewardship: Dr Thern

- Focus on
 - ➡ Adverse drug reactions + drug interactions
 - avoidance
 - recognition / evaluation of clinical relevance
 - advice for management
 - ➡ Surveillance of antibiotic consumption

Goal in European guideline:
harmonized methodology ⇒ internationally
comparable information on consumption

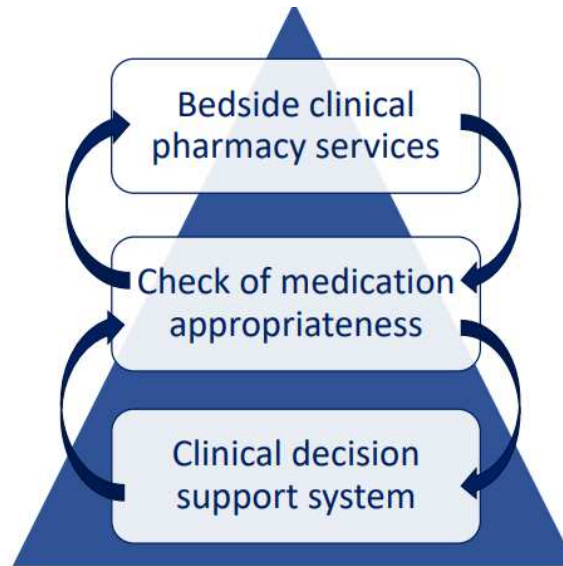


- Estandarizar
- Interpretar
- Feedback

4. Workshop Check of Medication Appropriateness (CMA): C. Quintens, T Van Nieuwenhuyse

Target group:

1. For all patients potentially at risk for drug related problems
2. Evaluation at any time during hospitalization
3. Evaluation independently of drug dispensing



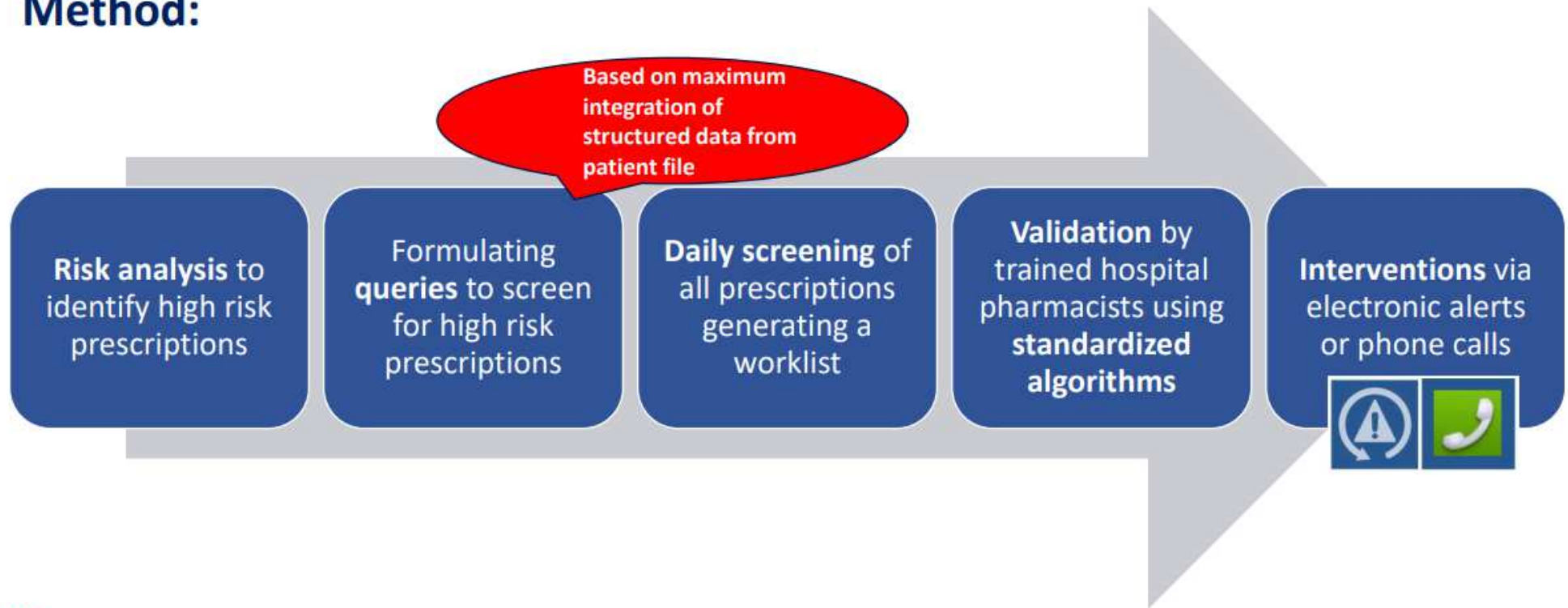
Charlotte Quintens

Tine Van Nieuwenhuyse

University Hospitals Leuven – Belgium

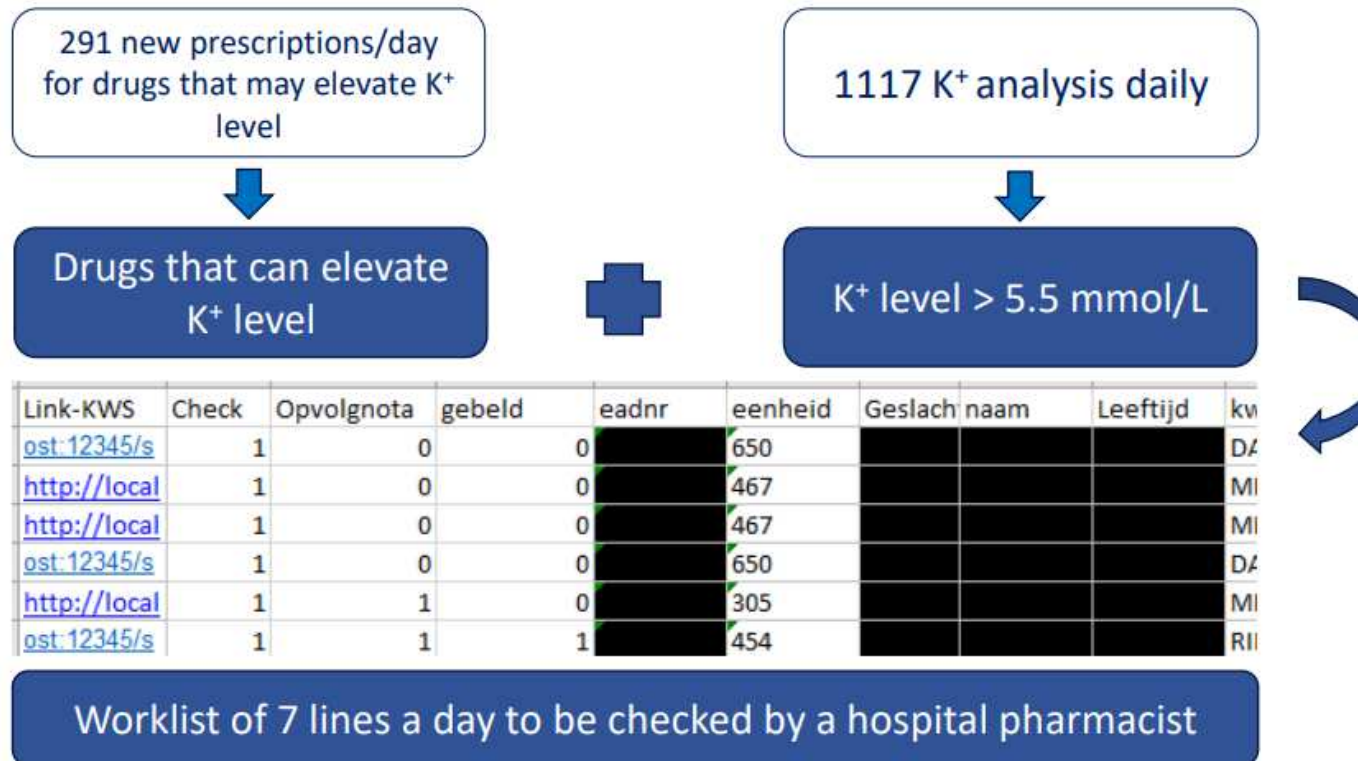
4. Workshop (CMA): C. Quintens, T Van Nieuwenhuyse

Method:



4. Workshop (CMA): C. Quintens, T Van Nieuwenhuyse

- **Maximum integration of structured data:**



4. Workshop (CMA): C. Quintens, T Van Nieuwenhuyse

- **First results (March 2016-September 2017):**



	Number of prescriptions checked (n)	Number of electronic notes (n (%))	Number of electronic notes + phone calls (n(%))
Drug use in renal insufficiency	9,381	444 (4.7%)	81 (0.9%)
Drugs with high potential of QT prolongation	4,223	608 (14.4%)	139 (3.3%)
Drugs with restrictive indication or dosing	5,276	448 (8.5%)	142 (2.7%)
Overruled severe DDIs	18,902	939 (5%)	259 (1.4%)

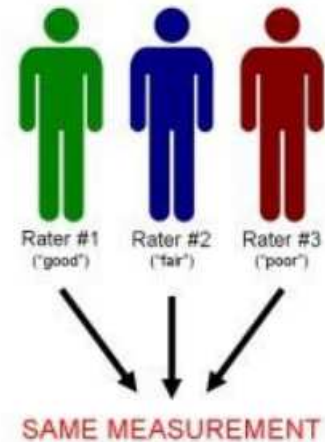
4. Workshop (CMA): C. Quintens, T Van Nieuwenhuyse

- **Multidisciplinary collaboration:**

- **Hospital Board**
 - Hospital wide communication – newsletter
 - Reporting results
- **Pharmaceutical and Therapeutics (P&T) Committee**
 - Identifying high risk prescriptions
 - Validation (of algorithms)
- **Medical Ethics committee**
 - Law on Patients' Rights
- **Other committees:** e.g. Antimicrobial stewardship committee

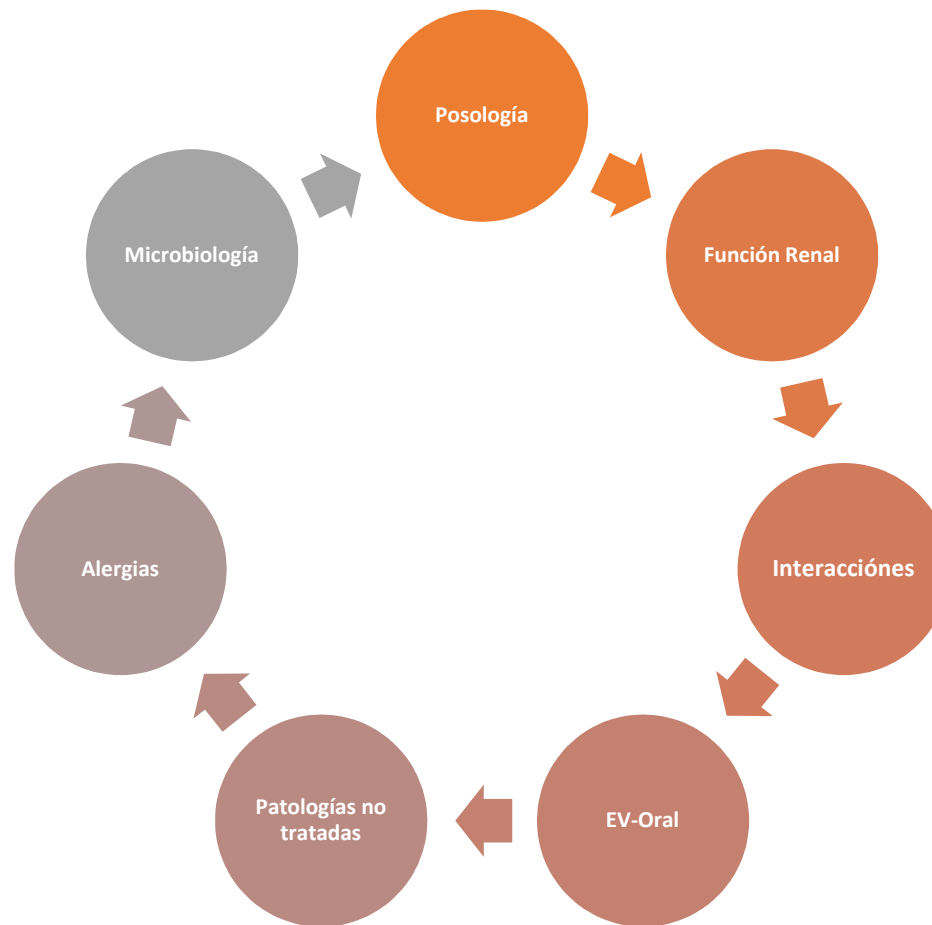
➔ **Hospital-wide support**

- Relevant national professional associations
- Partner Hospitals



4. Workshop (CMA): C. Quintens, T Van Nieuwenhuyse

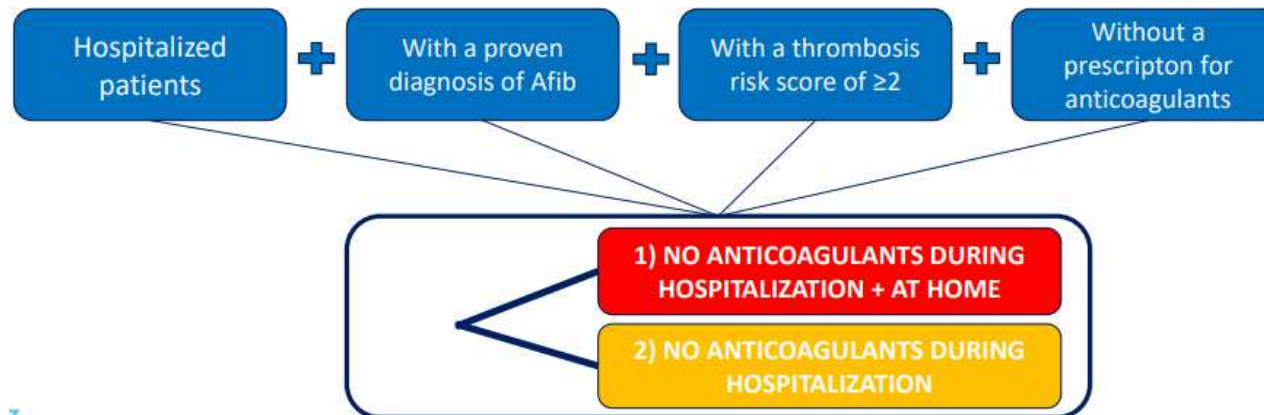
¿Por dónde empezar?



4. Workshop (CMA): C. Quintens, T Van Nieuwenhuyse

Ejemplo: Paciente ACxFA Anticoagulación

1. Analizar pacientes hospitalizados con diagnóstico de ACxFA
2. Y que necesiten anticoagulación pasado en CHAD-VASC
3. Y que no estén en tratamiento con anticoagulantes



MEDIR IMPACTO

Grado de Aceptación
Relevancia Clínica
Evaluar Satisfacción
Análisis Económico

Conclusiones

2.Managing Polypharmacy

- Personalizar tratamientos
- Adaptar el trabajo del farmacéutico a las necesidades del paciente

3.Antimicrobial Stewardship

- Necesidad de Farmacia de estar presente en los equipos PROA
- Empezar con objetivos fáciles y sencillos de realizar

4.Workshop Check of Medication Appropriatness (CMA)

- Explotar las posibilidades que ofrece la tecnología
- Maximizar recursos e impacto del farmacéutico en la validación farmacoterapéutica



**HOSPITAL PHARMACISTS
SHOW US WHAT YOU CAN DO!**

21st - 23rd March 2018

Gothenburg, Sweden

Gracias

Pablo March López
Farmacéutico Adjunto Mútua Terrassa

JORNADA POST EAHP

