Il modello di Antimicrobial Stewardship del Policlinico San Martino

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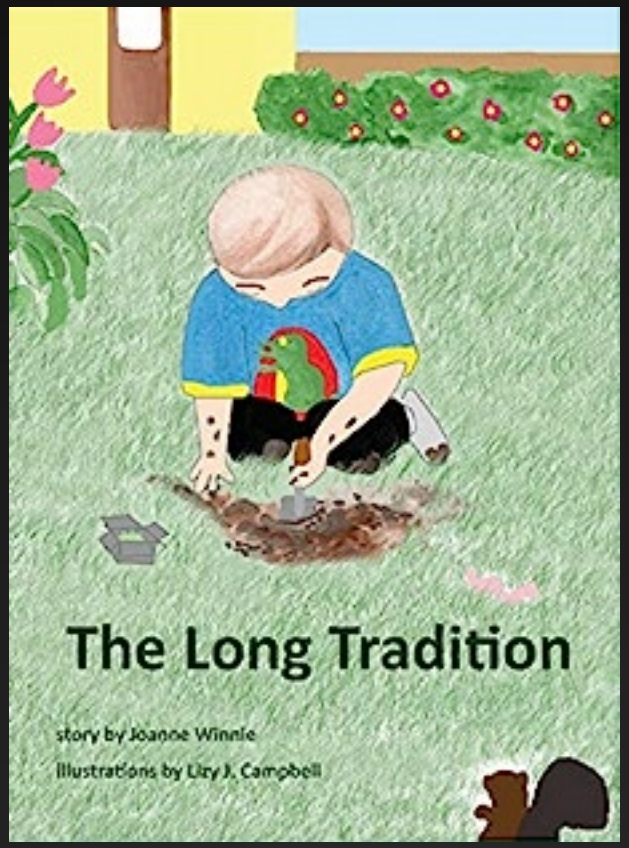
Conflict of interest

- Nothing to declare

The Antimicrobial Stewardship model of Policlinico San Martino



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Several types of intervention (passive vs active)

- **PASSIVE MEASURES**
  - Education
  - Order forms
  - Automatic stop orders
  - Limited formularies

- **ACTIVE MEASURES**
  - Bed-side advice
  - On site education
  - Multidisciplinary groups
  - Pre-authorization
  - Communication, communication, communication

Compulsory vs non-compulsory

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The Antimicrobial Stewardship model of Policlinico San Martino.

The Antimicrobial Stewardship in the emergency department

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OSPEDALE POLICLINICO SAN MARTINO
Sistema Sanitario Regione Liguria
Istituto di Ricovero e Cura a Carattere Scientifico

Progetto A.M.I.C.O.

Approccio Ragionato per la gestione delle **M**alattie **I**nfettive in **C**ollaborazione con il Pronto Soccors**O**

Prof. Matteo Bassetti, Prof. A. Di Biagio, Dott. A. Vena, Dott.ssa C. Dentone
Dott.ssa E. Balletto, Dott.ssa F. Portunato, Dott.ssa L. Magnasco, Dott.ssa S. Dettori

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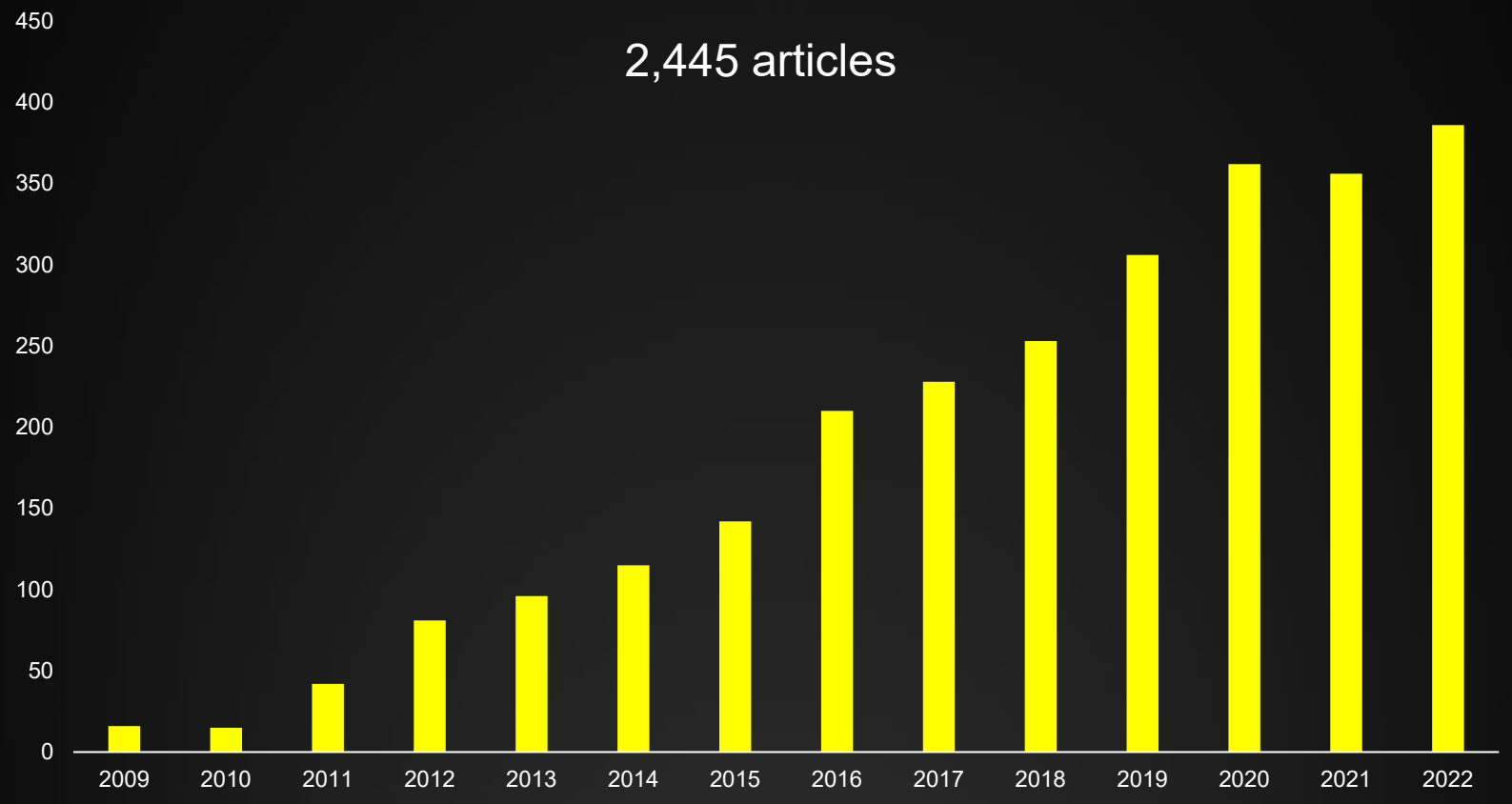
Antimicrobial stewardship [Title]
Pubmed



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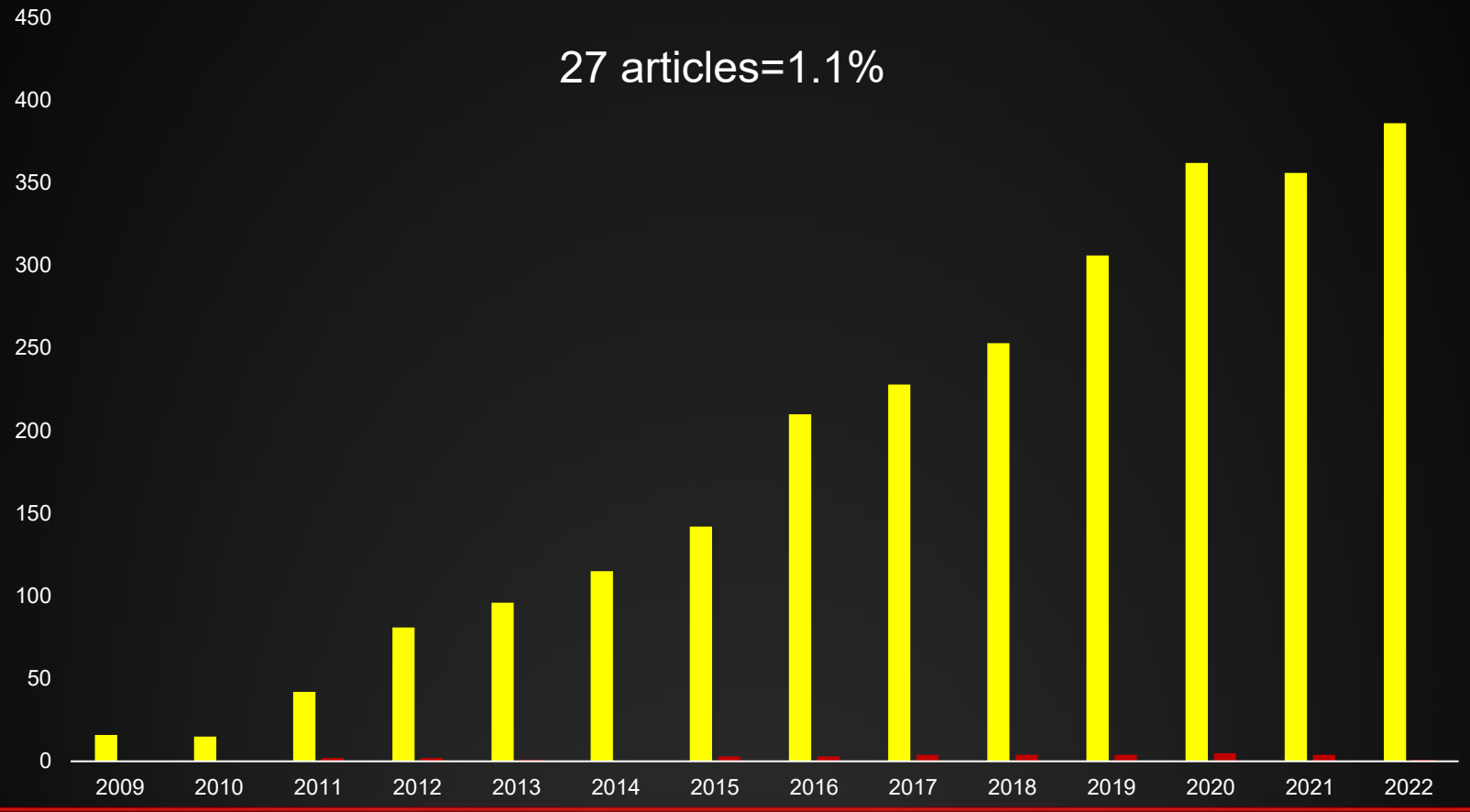
Antimicrobial stewardship [Title] and emergency department [Title]

Pubmed



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Antibiotic stewardship in the ED

Why it is so important?

- **The emergency department setting**
  - Interface between hospitalized pts and community settings
  - Large & varied mix of providers
  - High volume of patients

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Use of antibiotics in the ED

- **Up to 30% of ED admitted patients receive ABS**

- **50% of ABS are inappropriate**
  - Clinical decision making must occur quickly including for common infections (septic shock pts vs viral infections)
  - Two different populations: discharged vs inpatients.
  - Prescriptions initially started in ED often continued in other departments/outpatient setting

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Antibiotic use in the ED

- To date, **antibiotic stewardship** efforts have almost exclusively focused on **inpatient** settings

- Emergency department practitioners are uniquely positioned to affect change for the entire organization

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May L et al Clinical Microbiol Infect 2020

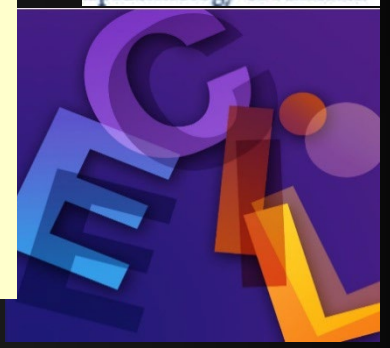
Antimicrobial stewardship

Practice that assures the optimal

- Selection

Optimal use of the resources

- Better clinical result
- Less adverse events (*Clostridium!*)
- Less resistance induction



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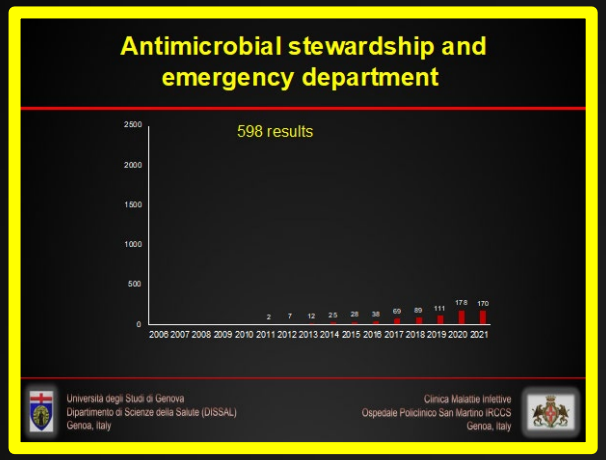
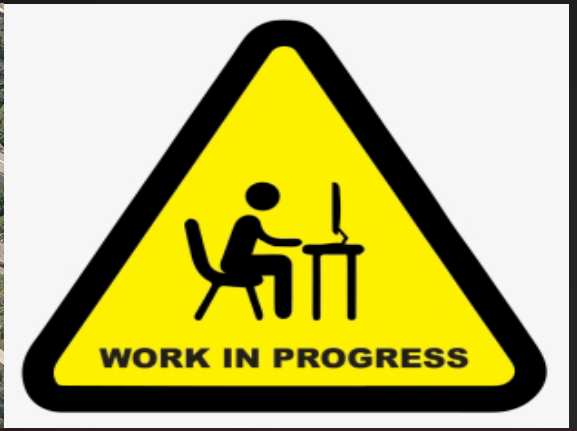
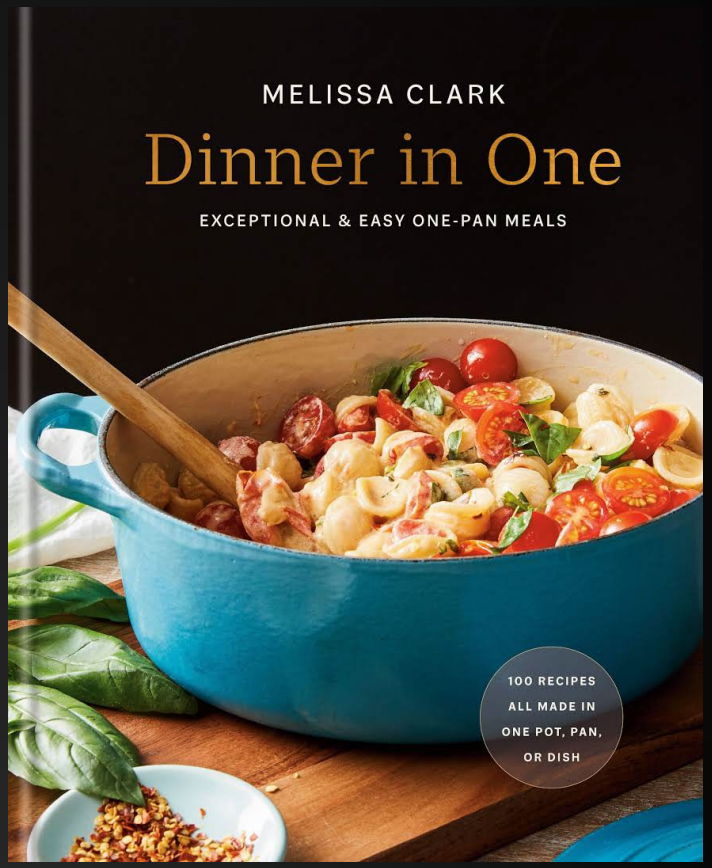
Ospedale

Modello San Martino







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Cooking book

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1. Organize a collaborative group with official support.

Include most important prescribers

MUSTHAVE

Leadership

- **ID physician and ED colleagues**
- **Pharmacist trained in ID**
- **Microbiology**
- Hospital epidemiologist, Infection prevention program and information technology

Prescriber's acceptance

- Local opinion leaders, "champions"
- Goals and commitments

Institutional support

- Medical director, manager, ID and ED chiefs, Infection control, Quality.

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1

Role for the nurses?

MUSTHAVE

- **Nurses often are the epicenter of patient care**
  - Communication with the health care team
  - Work closest with patients and their families in the hospital, community, and at home.

- **In the ED, nurses:**
  - Spend considerably more **1-on- 1 time** with the patient during the ED visit
  - Often are responsible for appropriate patient triage, accurate allergy history
  - Obtain **early and appropriate cultures** and administer timely antibiotic administration

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2b. Identify the magnitude of the problem and specific targets (our idea)

ABS audit
(200 prescriptions)

No information regarding step-down therapy or lenght of treatment

Indicazione	Il paziente aveva effettivamente bisogno della terapia?	SI	4
		NO	0
Selezione	Il trattamento scelto copre effettivamente i micro-organismi responsabili del quadro sindromico che si è scelto di coprire, tenendo anche i considerazione le possibili colonizzazioni precedenti?	Si ed è la prima opzione	2
		Lo copre però è un'alternativa	1
		Non copre nessuno dei micro-organismi pensati	0
Dose	La dose era corretta in funzione del del peso del paziente della funzione renale ed epatica?	SI	2
		Np	0
Modifica in funzione dei risultati micro	Sono stati effettuati esami microbiologici adeguati secondo il quadro sindromico scelto e PRIMA della terapia antibiotica?	SI	2
		NO	0
TOTAL SCORE			10

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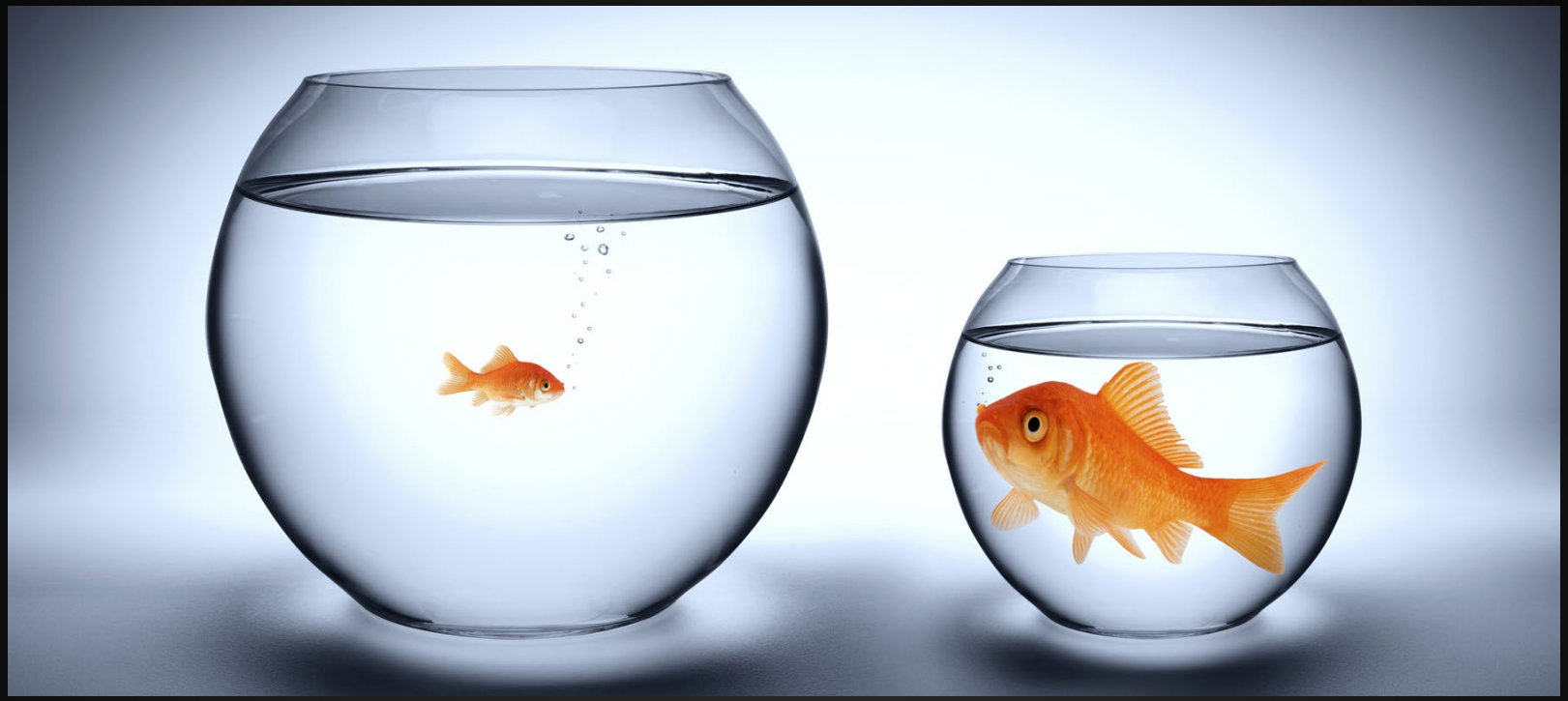
Why the audit and the survey?

To identify the determinants for Abs prescription



...To select the improvement strategy that results in desirable change in OUR specific setting…

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Areas for improvment in our ED stewardship

- Difficulties in performing microbiological/diagnostic tests prior to starting antibiotic therapy
- Choosing the correct first-line therapy for the syndrome and patient characteristics - which drug for that patient?
- Timing of initiating appropriate antibiotic therapy - when to wait to start antibiotics?

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Areas of improvment

Concrete examples

- **SSTI**
  - Dual therapy for uncomplicated infection
- **Respiratory tract infections**
  - Abx prescription for non responsive conditions
- **Urinary tract infections**
  - Abx for asymptomatic bacteriuria.

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Education

3. Initiate *educational activities*

- General and particular sessions
- Involve members of the AMS team

4. Produce your own *local guidelines*

- Local epidemiology, diagnostic criteria, indications, dose adjustments
- **WHEN NOT TO TEST; NOT TREAT; not to hospitalize.**
- Members contact telephones
- Intranet and/or pocket leaflets

Educational meetings

Small-group training events for 10 people, including medical and nursing staff from the Emergency Department

Local guidelines

Pocket guidelines concerning the diagnostic management and empirical/targeted therapy of the main infectious syndromes encountered at the ER

Principali sindromi cliniche di pertinenza infettivologica individuate per il presente progetto:

- Polmonite comunitaria
- Infezioni delle vie urinarie
- Malattie sessualmente trasmesse
- Infezioni di cute e tessuti molli
- Diarrea di origine comunitaria
- Infezioni intraddominali comunitarie
- Sepsi e shock settico di origine comunitaria
- Infezioni comunitarie del sistema nervoso centrale

SCHEDA RIASSUNTIVA DIAGNOSI E TRATTAMENTO POLMONITE COMUNITARIA

Diagnosi	profilo INFEZIONE + INFEZIONE POLMONARE (se necessità OBI o ricovero)	
Gestione	**Domiciliare** se non fattori clinici di rischio, PSI classe I/II, CURB-65 <1	
	OBI se non fattori clinici di rischio, PSI classe III, CURB-65 2	
	Ricovero se fattori di rischio clinici, PSI classe IV/V, CURB-65 ≥ 3	
Terapia	**Domiciliare**	Amoxicillina/clavulanato 875/125 mg ogni 8h + azitromicina 500 mg o levofloxacina 750 mg o moxifloxacina 400 mg
	OBI	Ceftriaxone 2g + azitromicina 500 mg o levofloxacina 750 mg
	Ricovero	Ceftriaxone 2g + azitromicina 500 mg o levofloxacina 750 mg Se instabilità emodinamica o ventilazione meccanica - ceftarolina 600 mg ogni 12h o ceftobiprole 500 mg ogni 8h + levofloxacina 750 mg
Durata terapia	Durata massima 5 giorni 14-21 giorni se polmonite da *Legionella* Durata da personalizzare in caso di paziente immunocompromesso o con infezione da *P. aeruginosa*/microrganismi resistenti/MRSA	

Valutazione specialistica infettivologica a 72 ore se non miglioramento clinico.

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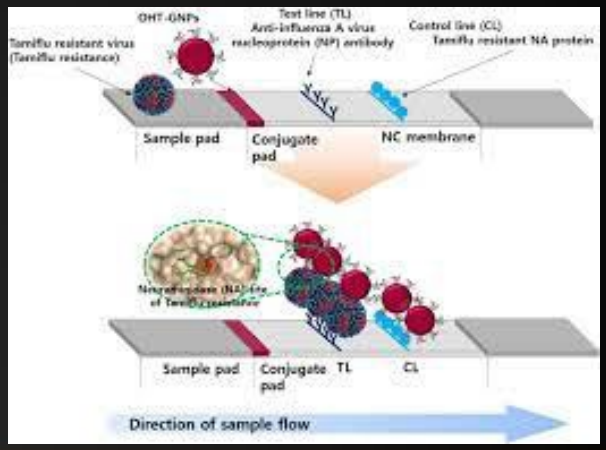
4. Rapid diagnostic test

Rapid strep testing was associated with a lower antibiotic prescription rate for children with pharyngitis (41.38% for those treated in the pre-RST phase versus 22.45% for those treated in the post-RST phase; $P < 0.001$).

Schoffelen T et al Clin Microb Infect 2020

Rapid influenza assay reduced ED antimicrobial use (23% vs 11%) while:
1. increasing oseltamivir use
2. Fewer blood cultures, blood gas, sputum

Schoffelen T et al Clin Microb Infect 2020



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5. Information technology

- Order entry system for the most important infectious diseases.
- Ability to cross-check pharmacy data with microbiology records and create ALERTs (?) when bug/drug mismatch detected

4) PROFILO SEPSI

- EGA arterioso — Lab. centrali ETICHETTA ROSSA

- emocoltura aerobi x2
- emocoltura anaerobi x2
- esame urine chimico-fisico
-urinocoltura

— Lab. centrali ETICHETTA VERDE

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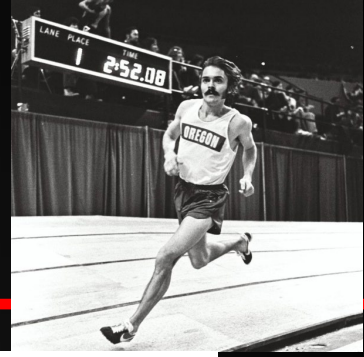
6. Bed-side intervention
Peer-comparison



ID specialists **interview** the prescribing physician

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7. ED is a Borderline

between inpatients and outpatiens

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What to do with discharged patients?

Fast-track access to ID consultant

- Outpatient clinic created ”ad hoc” to follow-up patients discharged from the ED.
- Establishment of several ”**Day-service**” for those patients discharged from the ED but who need further diagnostic assessment

Clinical Microbiology

- Daily revision of positive cultures obtained from patients admitted to the ED who are discharged. (each patient will be contacted by phone in case of inappropriate AB therapy or in case of discordant bug/drug).

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Think and plan !

- Action is good

- But planning, monitoring and assessing are crucial steps

8. Select your goals and indicators

- Adequacy of diagnostic and therapeutic management of the main infectious diseases treated at the Emergency Department
- DDD/1,000 admission at our Emergency Department and overall hospital
- BCs and Ucs performed at the ED/1000 visits
- Readmission rates to the Emergency Department for ID
- 30 day mortality rate among patients with positive BCs
- Average length of stay in Infectious Diseases and Critical Medical Area
- Rate of uncomplicated urinary tract infections and community-acquired pneumonia cases managed by Infectious Diseases in a different setting
- New diagnoses of HCV, HIV infection and syphilis.

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Dodds-Ashley E, et al. Pharmacotherapy 2012;32:890–901
Bloos F, et al. J Crit Care 2013;28:2–8

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5. Let's play with the informatics!
6. Daily Peer comparison
7. follow-up of discharged patients
8. Select indicators
9. **Share your success**
10. Never give-up!!!

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10. Feed-back and communication

- General and local meetings
  - Behavior modification
  - Ask for one suggestion
  - Ask prescribers how they feel about AMS program

    …..
- Celebrate all the successes (even if partial) and share the potential benefits
  - Manager benefits (contracts, etc etc)
  - Publications

Cooking book

1. Create a collaborative group
2. Identify the barriers for AMS implementation in the ED and possible tailored approach
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ABS: taking care of antibiotics while others are using them!

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the best of all… do not give up!!!

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COLLEGHI DEL PS