  
Ente Ospedaliere Cantonale

## Germi multiresistenti epidemiologia e strategie per le strutture di cure acute

Dr.med.C.Balmelli, Malattie Infettive ORL, Servizio EONOSO EOC

---

---

---

---

---


---

---

---

### Indice

- Epidemiologia dei principali germi MR
- Misure di prevenzione nelle strutture acute (EOC)

  
Ente Ospedaliere Cantonale

---

---

---

---


---

---

---

---

### 2013



- Methicillin Resistant *Staphylococcus Aureus*
- Extended Spectrum Beta – Lactamases
- Vancomycin Resistant Enterococci
- Carbapenem Resistant Enterobacteriaceae

  
Ente Ospedaliere Cantonale

---

---

---

---

---

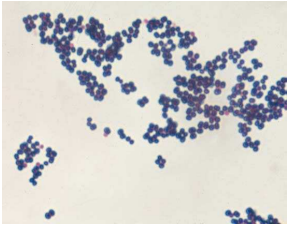

---

---

---

### S.aureus

- cocci gram positivi
- non sporulante
- resistente in ambienti inerti
- reservoir: l'uomo e qualche altro mammifero


---

---

---

---

---

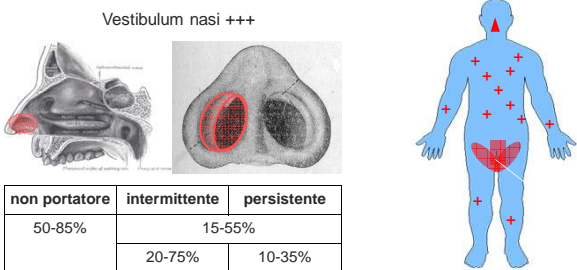
---

---

---

### Staphylococcus aureus: colonizzazione

Vestibulum nasi +++



non portatore	intermittente	persistente
50-85%	15-55%	
	20-75%	10-35%

*Clin Microbiol Rev 1997;10:505-20*  
*Clin Microbiol 1999;3:133-40*

---

---

---

---

---

---

---

---

### S.aureus

in comunita

**Infezioni cutanee**

- follicoliti
- foruncoli, carbuncoli
- ascessi cutanei
- impetigo

**Infezioni invasive**

- batteriemie
- batteriemie associate a dispositivi endovascolari
- polmoniti
- osteomieliti
- infezioni sito chirurgico
- infezioni endovascolari/endocarditi

in ospedale

---

---

---

---

---

---

---

---

**Profilo di resistenza degli MRSA (EOC)**

antibiotico	classe	MRSA
Penicillina	b-lattamici e derivati	R
Cefalosporine		R
Floxapen®		R
Tazobac®		R
Tienam®		R
Amikacina	aminoglicosidi	R/S
Gentamicina		R/S
Ciproxin®	fluorochinoloni	R/S
Noroxin®		R/S
Klacid®	macrolidi	R/S
Dalacin®		R/S
Fucidin®		R/S
Bactrim®		S
Rifampicina		S
Vancocin®		S
Targocid®		S

---

---

---

---

---

---

---

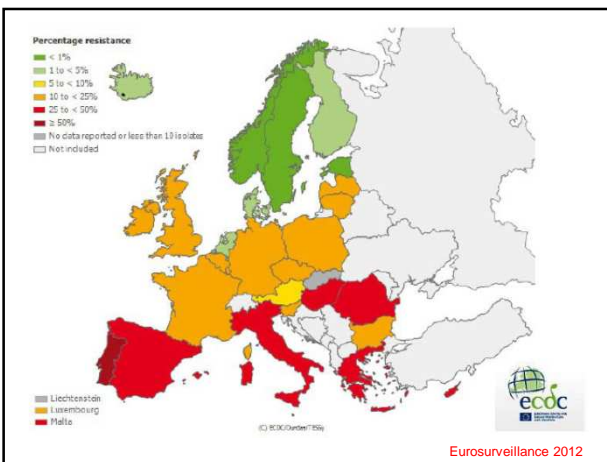
---

---

---

---

---




---

---

---

---

---

---

---

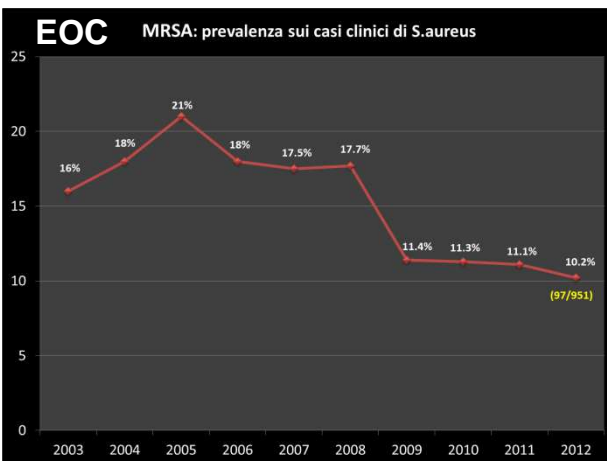
---

---

---

---

---




---

---

---

---

---

---

---

---

---

---

---

---

2013



- Methicillin Resistant *Staphylococcus Aureus*
- Extended Spectrum Beta – Lactamases
- Vancomycin Resistant Enterococci
- Carbapenem Resistant Enterobacteriaceae

  
Banco Diagnostico Carlini

---

---

---

---

---

---

---


---

---

---

### Extended Spectrum Beta-Lactamases

$\beta$ -lattamasi / ATB	Peni A	Amoxi/clav	UreidoP	C1	C2	C3/C4/C5	Carba
Penicillinasi	R	S	I/S	S	S	S	S
Penicillinasi iperprodotta	R	I/R	I/R	I/R	I/R		
Cefalosporinasi	R	R	S	R	I/R	S	S
Cefalosporinasi Iperprodotta	R	R	R	R	R	R	S
ESBL	R	R	R	R	R	R/R/R	S
$\beta$ -lattamasi R agli inibitori	R	R	I	S	S	S	S

  
Banco Diagnostico Carlini

---

---

---

---

---

---

---


---

---

---

### Germi Produttori di ESBL

- *Escherichia Coli*
- *Klebsiella pneumoniae*
- *Proteus mirabilis*
- *Enterobacter aerogenes*
- *Enterobacter cloacae*
- *Citrobacter freundii*
- *Serratia marcescens*
- *Salmonella*
- *Morganella morganii*
- *Klebsiella Oxytoca*
- *Citrobacter koseri*
- *Pseudomonas aeruginosa*

  
Banco Diagnostico Carlini

---

---

---

---

---

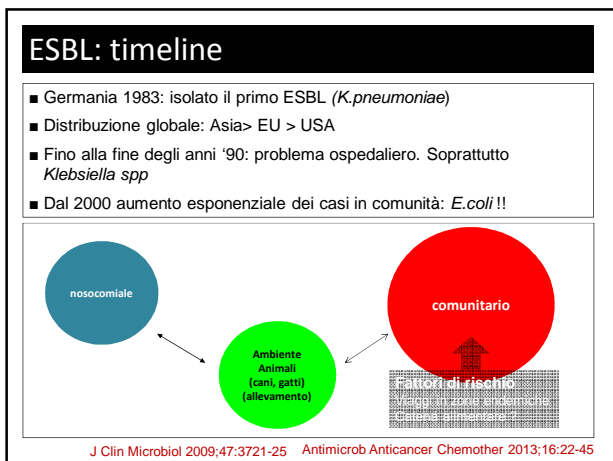
---

---

---

---

---




---

---

---

---

---

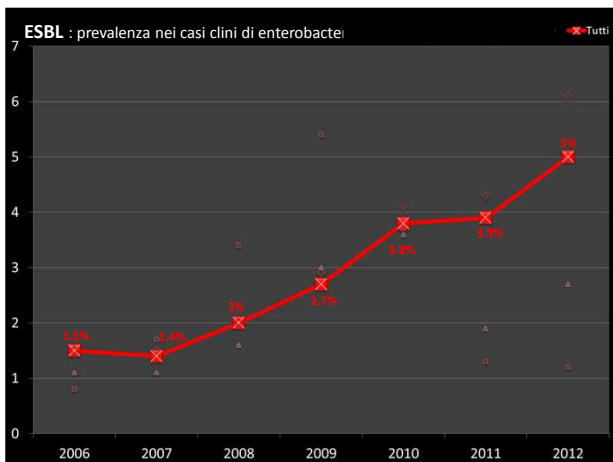
---

---

---

---

---




---

---

---

---

---

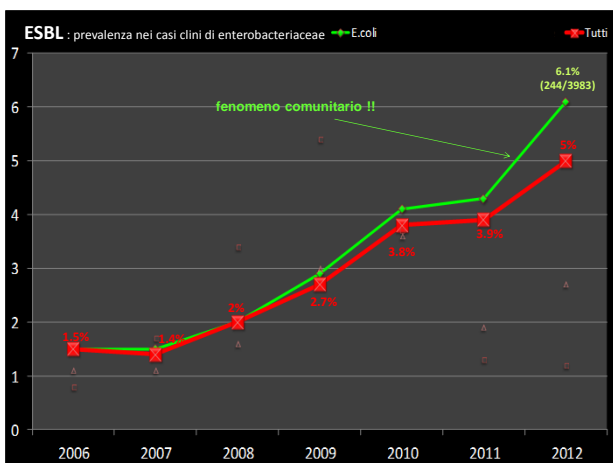
---

---

---

---

---




---

---

---

---

---

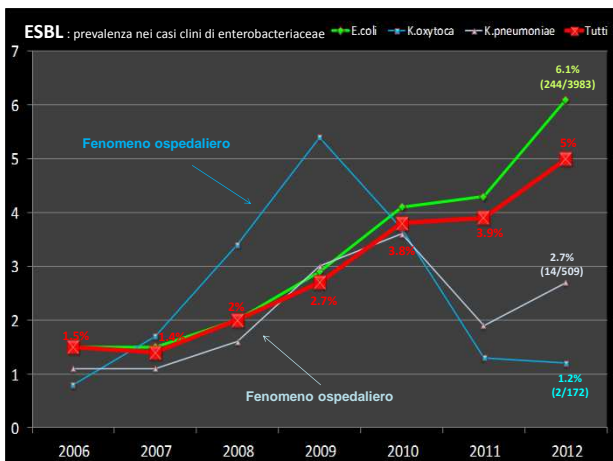
---

---

---

---

---



---

---

---

---

---

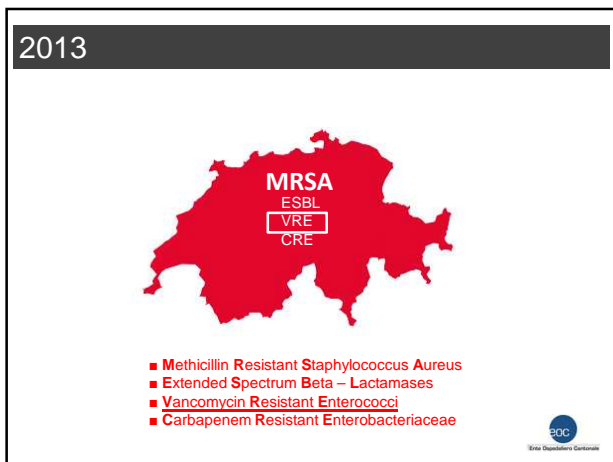
---

---

---

---

---



---

---

---

---

---

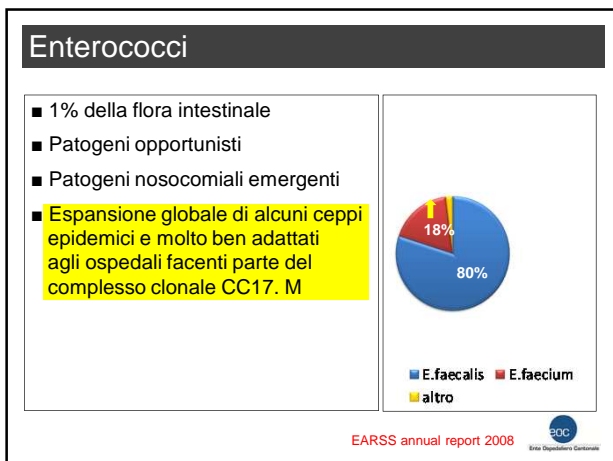
---

---

---

---

---



---

---

---

---

---

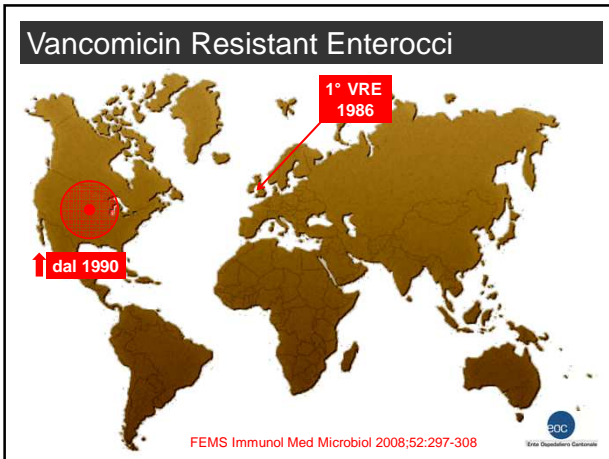
---

---

---

---

---




---

---

---

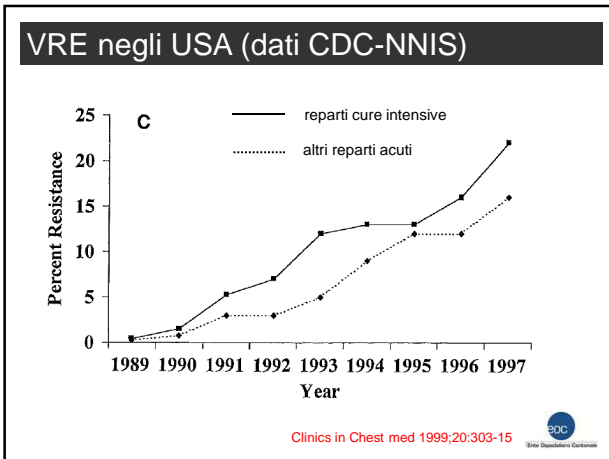
---

---

---

---

---




---

---

---

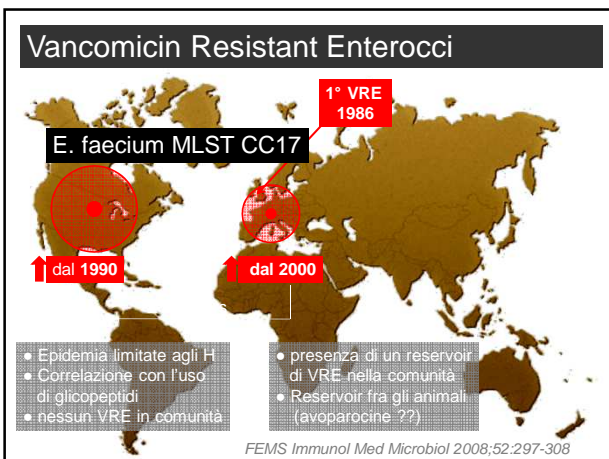
---

---

---

---

---




---

---

---

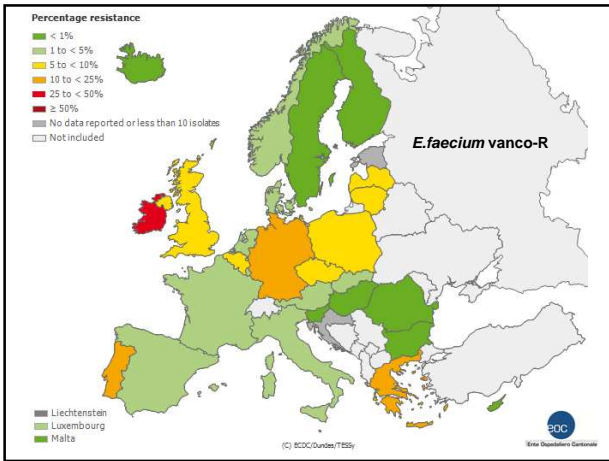
---

---

---

---

---




---

---

---

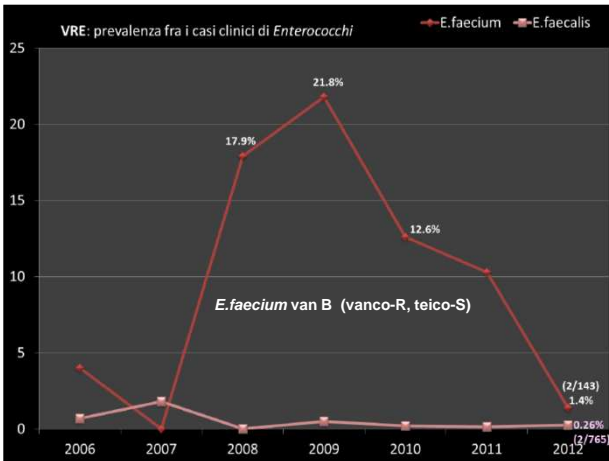
---

---

---

---

---




---

---

---

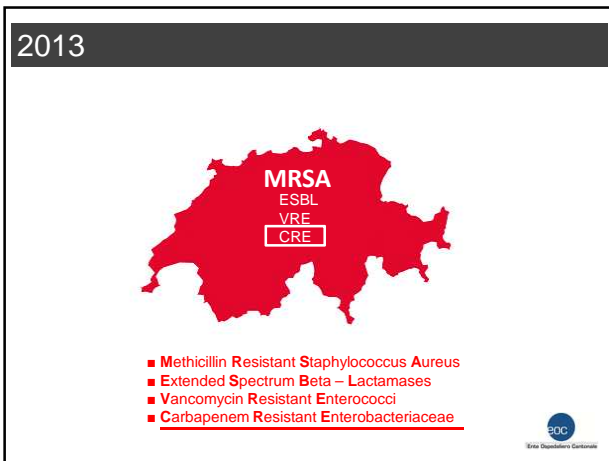
---

---

---

---

---




---

---

---

---

---

---

---

---



Bastoncelli gram negativi che fanno parte della Normale flora intestinale dell'uomo

- Escherichia coli
- Klebsiella spp
- Citrobacter spp
- Enterobacter spp
- Proteus spp
- Morganella spp
- Shigella spp
- ecc.

↓

**Carbapenem Resistant Enterobacteriaceae**

↑

Antibiotici betalattamici a larghissimo spettro

- imipenem-cilastatin (Tienam®)
- meropenem (Meronem®)
- ertapenem (Invanz®)

---

---

---

---

---

---

---

---

---

---

### CRE

β-lattamasi/ATB	Peni A	Amoxi/clav	UreidoP	C1	C2	C3/C4/C5	Carba
Penicillinasi	R	S	I/S	S	S	S	S
Penicillinasi iperprodotta	R	I/R	I/R	I/R	I/R	S	S
Cefalosporinasi	R	R	S	R	I/R	S	S
Cefalosporinasi iperprodotta	R	R	R	R	R	R	S
ESBL	R	R	R	R	R	R/R/R	S
β-lattamasi R agli inibitori	R	R	I				S
<b>Carbapenemasi</b>	<b>R</b>	<b>R</b>	<b>R</b>	<b>R</b>	<b>R</b>	<b>R</b>	<b>R</b>

---

---

---

---

---

---

---

---

---

---




---

---

---

---

---

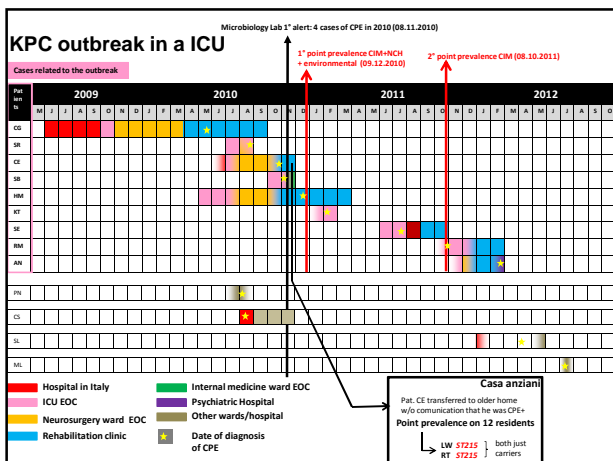
---

---

---

---

---




---

---

---

---

---

---

---

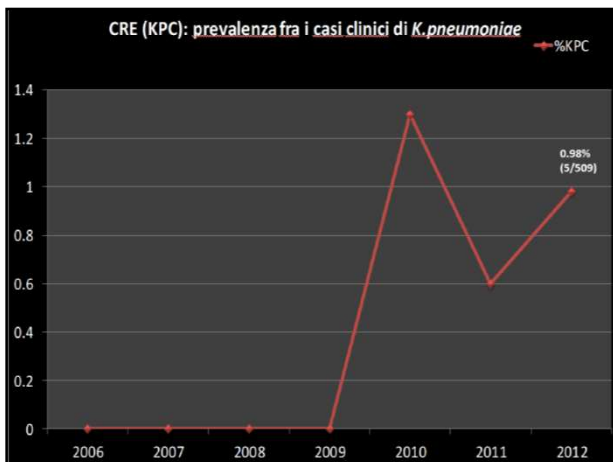
---

---

---

---

---




---

---

---

---

---

---

---

---

---

---

---

---

### Indice

- Epidemiologia e impatto dei principali germi MR
- Misure di prevenzione della trasmissione all'EOC

---

---

---

---

---

---

---

---

---

---

---

---

### Trasmissione degli agenti patogeni

■ Tre modalità principali di trasmissione

1 **contatto**    **respiratoria**  
2 **goccioline**    3 **aerosol**

2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings  
CDC

[http://www.cdc.gov/ncidod/dhqp/gl\\_isolation.html](http://www.cdc.gov/ncidod/dhqp/gl_isolation.html)

---

---

---

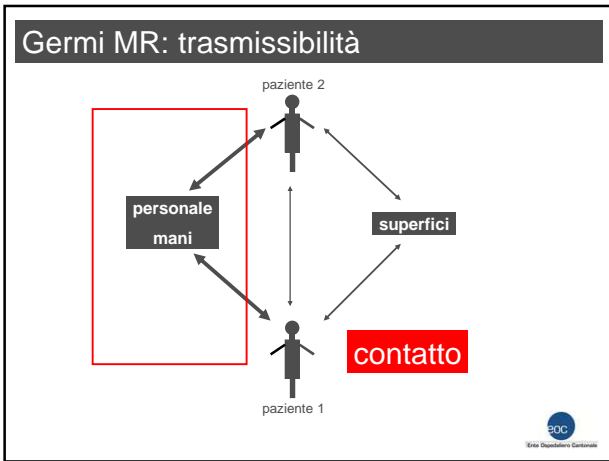
---

---

---

---

---



---

---

---

---

---

---

---

---

### Misure per prevenire la trasmissione

Aerosol

- disinf. Mani
- Se proiezione di liquidi  
  - occhiali  
  - guanti monouso  
  - mascherina chirurgica  
  - occhiali di protezione  
  - per tutti i paz.
- guanti monouso per ogni contatto  
  - overcamice  
  - camera singola in ospedale  
  - disinfezione superfici  
  - RSA, ESBL, difficili, VRE
- mascherina chirurgica (paziente e curante)
- + mascherina ultrafiltrante (curante)  
+ camera pressione negativa

VZV, SARS, o TBC

[http://www.cdc.gov/ncidod/dhqp/gl\\_isolation.html](http://www.cdc.gov/ncidod/dhqp/gl_isolation.html)

---

---

---

---

---

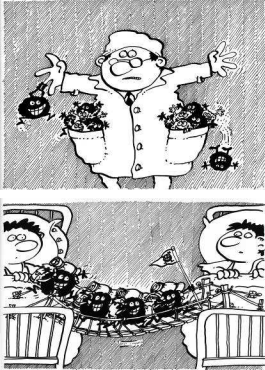
---

---

---

### MRSA: trasmissibilità

- Rischio di trasmissione di MRSA in ospedale quando un paziente portatore non viene individuato come tale:
  - 15 x sul reparto (1)
  - 38 x in cure intensive (2)



(1) Jernigan JA et al. *AM J Epidemiol* 1998  
 (2) Austin DJ et al. *JID* 1999

---

---

---

---

---

---

---

---

---

---


### Portatori di germi MR: significato

- Essere portatori di un germe MR non è una malattia!
- Il problema è la possibile trasmissione a persone ad alto rischio di fare infezioni batteriche
- Quindi il problema dipende molto dal contesto in cui ci si trova

Ospedali acuti > cliniche di riabilitazione > case anziani > domicilio

misure di prevenzione della trasmissione

+ -




---

---

---

---

---

---

---

---

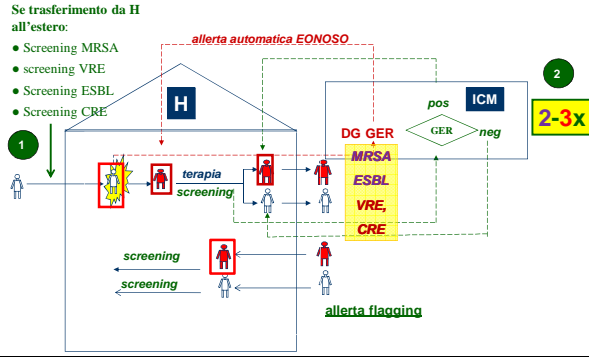
---

---

### Germi MR: presa in carico all'EOC

Se trasferimento da H all'estero:

- Screening MRSA
- screening VRE
- Screening ESBL
- Screening CRE



allerta automatica EONOSO


allerta flagging

DG GER: MRSA, ESBL, VRE, CRE

ICM: pos, neg

2-3x

Nuova gestione dei pazienti portatori di germi multiresistenti all'EOC / 2012 /




---

---

---

---

---

---

---

---


---

---

### Screening

- **Tipo di screening**
  - **MRSA:** striscio naso + inguine + evtl. ferite + urine se CV + siti prec. positivi
  - **VRE:** striscio retto + urine se CV + exite site cateteri vasc + siti prec. positivi
  - **ESBL:** striscio retto + urine se CV + exite site cateteri vasc + siti prec. positivi
- **Indicazioni**
  - pazienti trasferiti dall'estero
  - pazienti noti portatori o ex-portatori
  - vicini di letto di pazienti portatori

Nuova gestione dei pazienti portatori di germi multiresistenti all'EOC / 2012 /



---

---

---

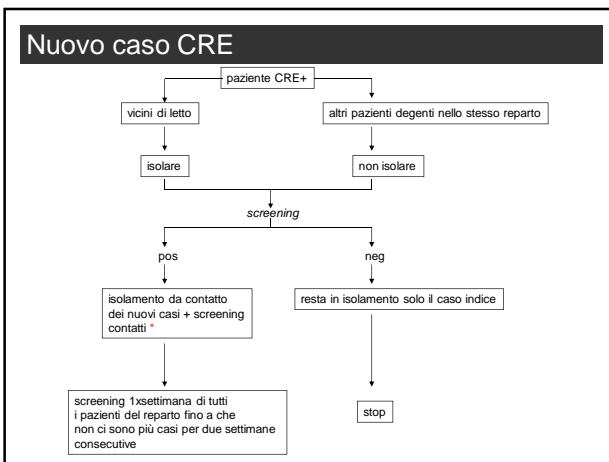
---

---

---

---

---



---

---

---

---

---

---

---

---

.... Grazie per l'attenzione....

---

---

---

---

---

---

---

---