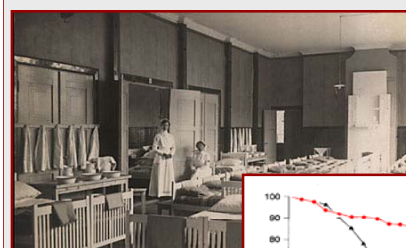


## The Global Problem of Antibiotic Resistance and the Swedish Approach

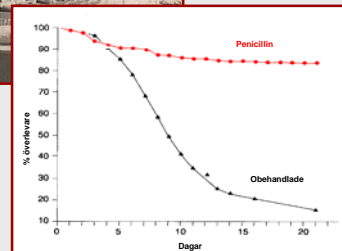
Prof. Otto Cars  
Director, Strama  
Sweden

China-Sweden Conference on Antibiotic Resistance  
Beijing, April 28, 2009



Patients with pneumonia and bacteria in blood

Penicillin increased the chance of survival from 10% to 90%



The global self-deception:  
We will always have antibiotics



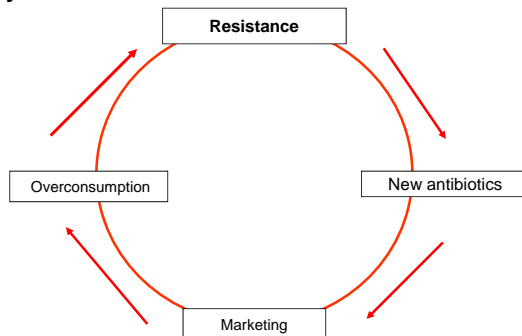
“It is not difficult to make microbes resistant to penicillin...”

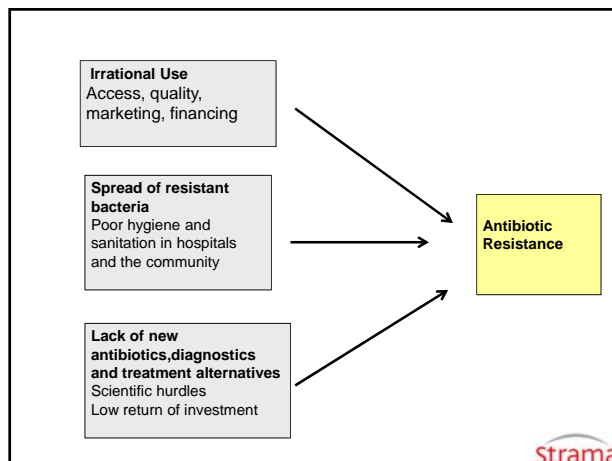
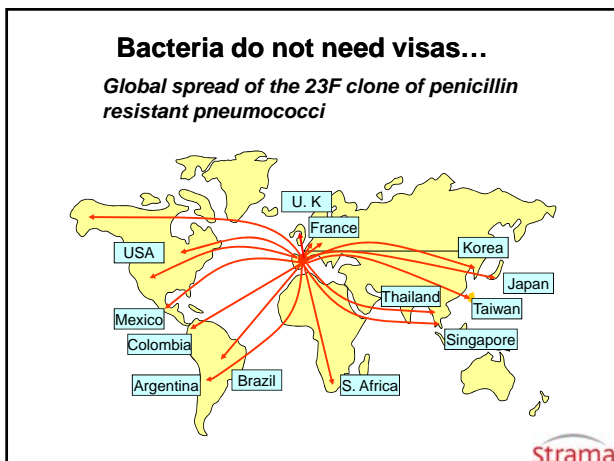
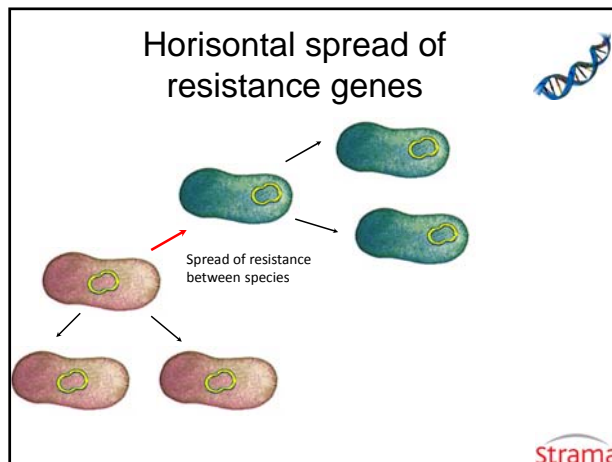
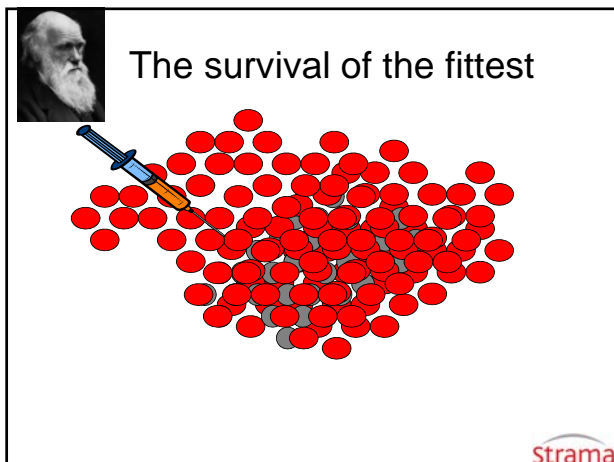
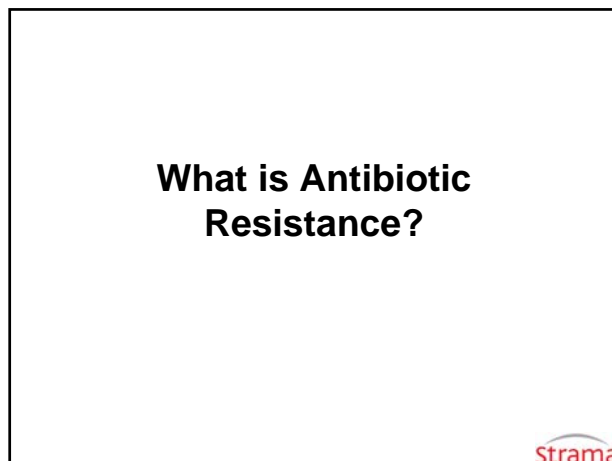
“The time may come when penicillin can be bought by anyone in the shops”

Alexander Fleming's Nobel Lecture, 1945



60 years of antibiotic use...





**About 70 % of the bacteria causing neonatal sepsis in the developing world can not be treated with the antibiotics recommended by WHO....**

Lancet 2005; 365: 1175-88



**“On the thinnest of ice”**

Resistance in bacteria causing Urinary tract infections: hospitalised patients, rural India (n=68)

Cotrimoxazole	94%
Ciprofloxacin	91%
1 <sup>st</sup> gen.cephalosporin	97%
Gentamicin	68%
<b>Amikacin</b>	<b>25%</b>
3 <sup>rd</sup> generation ceph.	72%

Anurag Bhargava M.D. et al  
Health Centre: District Bilaspur, Chhattisgarh India.



**The consequences.....**

- **Neonatal sepsis:** crude number of excess deaths due to Antibiotic Resistance for South Asia alone = **300,000 children yearly** (Bhutta 2006, in process).
- **Bloodstream infection:** **43.5%** of the children with Gram-negative bloodstream infection died in a Tanzanian study (Blomberg, 2007).
- **Multiresistant enteric bacteria:** In Israel **3% of all fatalities** in hospitals related to Gram-negative multiresistant nosocomial infections (Carmeli, 2006).
- **Gonorrhoea:** Rough estimate of global gonorrhoea treatment failure: **3 million cases** annually (of total 62 million cases) (Tapsall, 2005).

www.reactgroup.org



**Resistance-Outcome**

655 patients with with verified infections in intensive care

**Inadequate antibiotic treatment (22.5%)**

**Adequate antibiotic treatment**

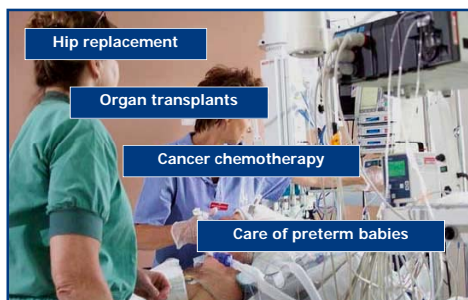
**Mortality 42%**

**Mortality 17.7%**

Kollef et al Chest:115:462,1999



**Modern Medicine Is Not Possible Without Effective Antibiotics**

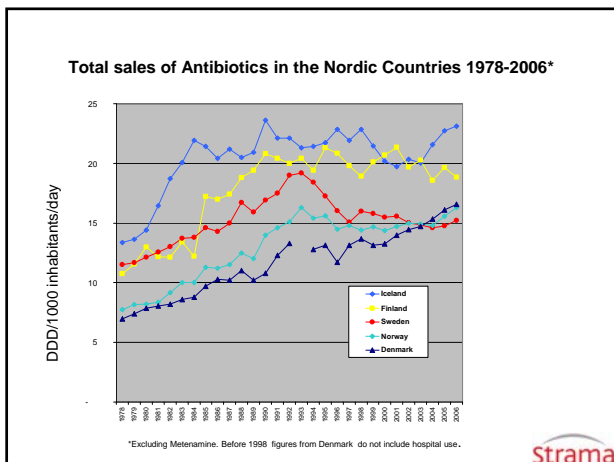
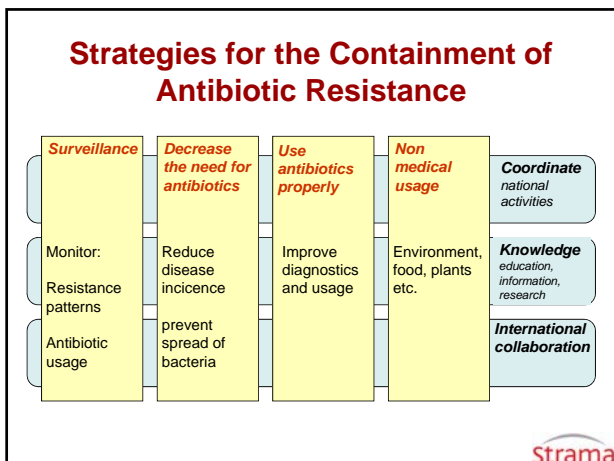



**The Swedish Strategic Programme Against Antibiotic Resistance**

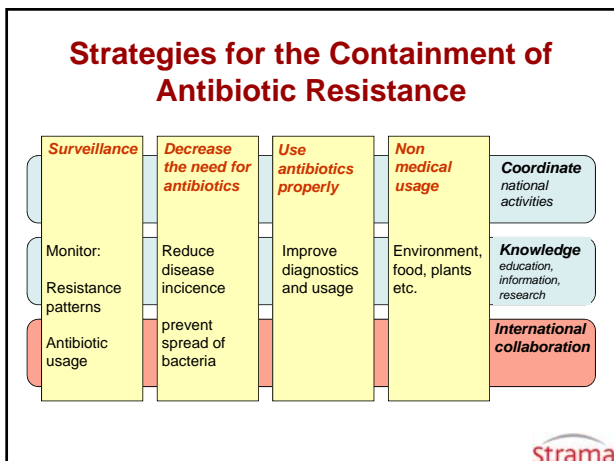
**Overall objective**  
To preserve effective antibacterial therapy for the future

[http:// www.strama.se](http://www.strama.se)





- It is possible to significantly change antibiotic use
  - There is no "one-size-fits-all" model for countering antibiotic resistance
  - Each intervention package needs to be tailored to local conditions
  - Global collaboration and sharing of knowledge is essential
- 



FIFTY-EIGHTH WORLD HEALTH ASSEMBLY  
 Agenda Item 13.10

WHA58.27  
 25 Mar 2005

**Improving the containment of antimicrobial resistance**

