“Problemas emergentes de Saúde Pública:
A propósito da estratégia 90%-90%-90% da OMS (e da realidade do CHS)”

JOSÉ M. D. POÇAS

DIRETOR DO SDI DO CHS HSB SETÚBAL

O SDI 2ª PARTE : NÓS … E OS OUTROS!!!

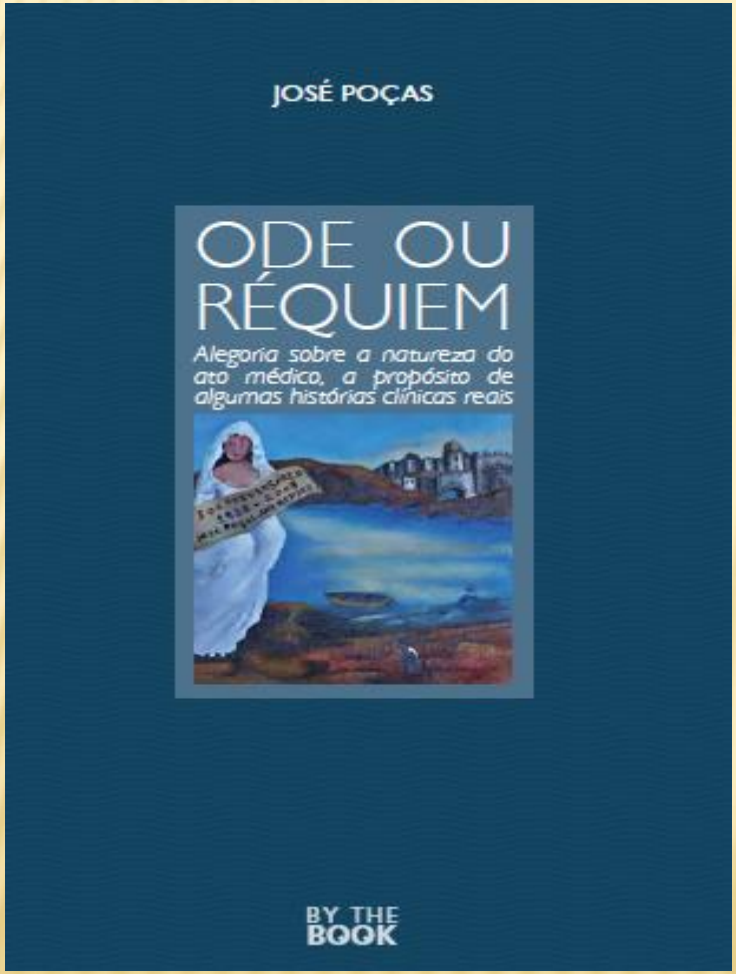
POTENCIAIS CONFLITOS DE INTERESSE…

- *"Advisary Boards"*
  - Gilead
  - Janssen
  - VIIV
  - BMS
  - MSD

infarmed
Autoridade Nacional do Medicamento
e Produtos de Saúde I.P.

- Congressos e Palestras
  - Abbott
  - Bayer
  - BMS
  - Boheringer Ingelheim
  - Gilead
  - Janssen
  - MSD
  - ROCHE
  - VIIV

OS MEUS ÚNICOS E VERDADEIROS CONFLITOS DE INTERESSE!!!



SUMÁRIO

- I)- Introdução
- II)- Os Problemas Emergentes
  - Multirresistência aos ABs
- III)- Doenças Emergentes
  - Infeções transmitidas por vetores e zoonoses
- IV)- O HIV/SIDA
  - Os desafios da NOVA estratégia 90/90/90% da ONUSIDA
- V)- A realidade do CHS
- VI)- Conclusões

I)- INTRODUÇÃO

O PENSAMENTO DE QUEM SABIA BEM DO QUE FALAVA!!!

- "... meus senhores, mas são os micróbios que terão a última palavra..." (Louis Pasteur, 1882-1895)

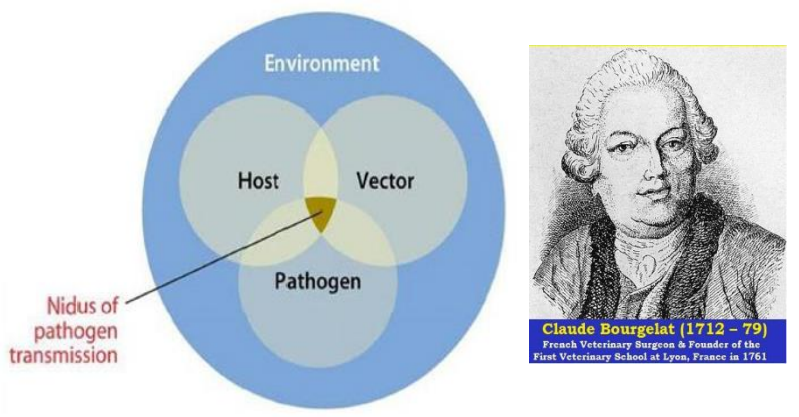
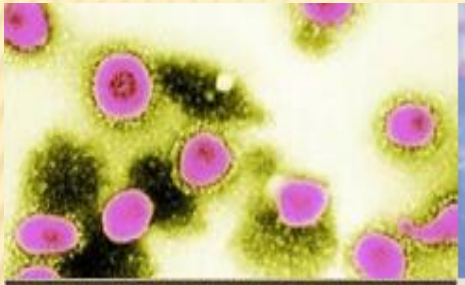
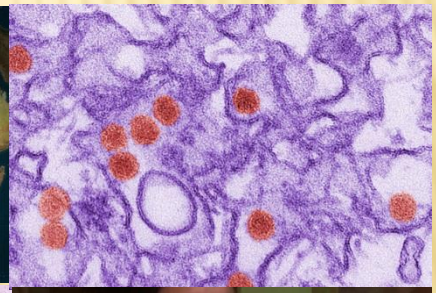
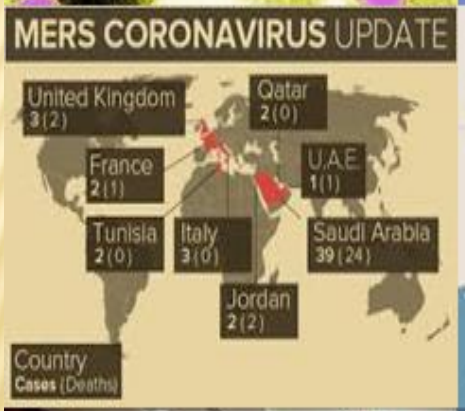


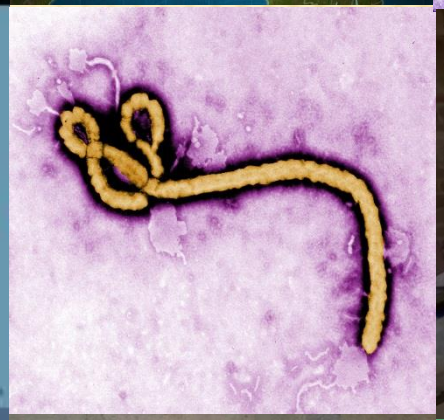
FIGURE WO-3 Key influences on vector-borne plant diseases.
SOURCE: Reisen, 2010. Reproduced with permission of *Annual Review of Entomology*, Volume 55, © by Annual Reviews, http://www.annualreviews.org.

APENAS, OS CASOS MAIS RECENTES ...









AS PALAVRAS NÃO PODEM SER UMA MERA CONVENIÊNCIA DE CIRCUNSTÂNCIA

- Adenda de 1989
  - "Todo e cada um dos doentes deve beneficiar do melhor tratamento conhecido possível"

O GOVERNO PORTUGUÊS TAMBÉM LEGISLOU NO MESMO SENTIDO

ASSEMBLEIA DA REPÚBLICA

Lei n.º 15/2014
de 21 de março
Lei consolidando a legislação em matéria de direitos e deveres do utente dos serviços de saúde

CAPÍTULO II
Direitos do utente dos serviços de saúde

Artigo 2.º
Direito de escolha
1 — O utente dos serviços de saúde tem direito de escolha dos serviços e prestadores de cuidados de saúde, na medida dos recursos existentes.
2 — O direito à proteção da saúde é exercido tomando em consideração as regras de organização dos serviços de saúde.

Artigo 4.º
Adequação da prestação dos cuidados de saúde
1 — O utente dos serviços de saúde tem direito a receber, com prontidão ou num período de tempo considerado clinicamente aceitável, consoante os casos, os cuidados de saúde de que necessita.
2 — O utente dos serviços de saúde tem direito à prestação dos cuidados de saúde mais adequados e tecnicamente mais corretos.
3 — Os cuidados de saúde devem ser prestados humanamente e com respeito pelo utente.

Artigo 9.º
Queixas e reclamações
1 — O utente dos serviços de saúde tem direito a reclamar e apresentar queixa nos estabelecimentos de saúde, nos termos da lei, bem como a receber indemnização por prejuízos sofridos.
2 — As reclamações e queixas podem ser apresentadas em livro de reclamações ou de modo avulso, sendo obrigatória a resposta, nos termos da lei.
3 — Os serviços de saúde, os fornecedores de bens ou de serviços de saúde e os operadores de saúde são obrigados a possuir livro de reclamações, que pode ser preenchido por quem o solicitar.

CAPÍTULO V
Da Carta dos Direitos de Acesso aos Cuidados de Saúde pelos Utentes do Serviço Nacional de Saúde

Artigo 25.º
Objetivo e conteúdo
1 — A Carta dos Direitos de Acesso visa garantir a prestação dos cuidados de saúde pelo SNS e pelas entidades convencionadas em tempo considerado clinicamente aceitável para a condição de saúde de cada utente do SNS, nos termos da presente lei.
2 — A Carta dos Direitos de Acesso define:
a) Os tempos máximos de resposta garantidos;
b) O direito do utente à informação sobre esses tempos.
3 — A Carta dos Direitos de Acesso é publicada anualmente em anexo à portaria que fixa os tempos máximos garantidos.
4 — A Carta dos Direitos de Acesso é divulgada no portal da saúde e obrigatoriamente afixada em locais de fácil acesso e visibilidade em todos os estabelecimentos do SNS, bem como em todos os que tenham convencionado a prestação de cuidados de saúde aos seus utentes.

Artigo 26.º
Tempos máximos de resposta garantidos
1 — Para efeitos do disposto no artigo anterior, o membro do Governo responsável pela área da saúde estabelece, por portaria, os tempos máximos de resposta garantidos para todo o tipo de prestações sem carácter de urgência, nomeadamente ambulatório dos centros de saúde, cuidados domiciliários, consultas externas hospitalares, meios

Diário da República, 1.ª série — N.º 57 — 21 de março de 2014 **2131**

complementares de diagnóstico e terapêutica e cirurgia programada.
2 — Gradualmente, os tempos máximos de resposta garantidos por tipo de prestação são discriminados por patologia ou grupos de patologias.
3 — Cada estabelecimento do SNS, tomando como referência a portaria referida no n.º 1, fixa anualmente, dentro dos limites máximos estabelecidos a nível nacional, os seus tempos de resposta garantidos por tipo de prestação e por patologia ou grupo de patologias, os quais devem constar dos respetivos plano de atividades e contratos -programa.

Artigo 27.º
Informação ao utente
De forma a garantir o direito do utente à informação, previsto no artigo 25.º da presente lei, os estabelecimentos do SNS e do sector convencionado são obrigados a:
a) Afixar em locais de fácil acesso e consulta pelo utente a informação atualizada relativa aos tempos máximos de resposta garantidos por patologia ou grupos de patologias, para os diversos tipos de prestações;
b) Informar o utente no ato de marcação, mediante registo ou impresso próprio, sobre o tempo máximo de resposta garantido para prestação dos cuidados de que necessita;
c) Informar o utente, sempre que for necessário acionar o mecanismo de referenciação entre os estabelecimentos do SNS, sobre o tempo máximo de resposta garantido para lhe serem prestados os respetivos cuidados no estabelecimento de referência, nos termos previstos na alínea anterior;
d) Informar o utente, sempre que a capacidade de resposta dos estabelecimentos do SNS estiver esgotada e for necessário proceder à referenciação para os estabelecimentos de saúde do sector privado, nos termos previstos na alínea *b*);
e) Manter disponível no seu sítio da Internet informação atualizada sobre os tempos máximos de resposta garantidos nas diversas modalidades de prestação de cuidados;
f) Publicar e divulgar, até 31 de março de cada ano, um relatório circunstanciado sobre o acesso aos cuidados que prestam, os quais serão auditados, aleatória e anualmente, pela Inspeção -Geral das Atividades em Saúde.

Artigo 28.º
Reclamação
É reconhecido ao utente o direito de reclamar para a Entidade Reguladora da Saúde (ERS), nos termos legais aplicáveis, caso os tempos máximos garantidos não sejam cumpridos.

Aprovada em 20 de fevereiro de 2014.
A Presidente da Assembleia da República, *Maria da Assunção A. Esteves.*
Promulgada em 11 de março de 2014.
Publique -se.
O Presidente da República, Aníbal Cavaco Silva.
Referendada em 13 de março de 2014.
O Primeiro -Ministro, *Pedro Passos Coelho.*

O MAIS ECONÓMICO DOS MELHORES TRATAMENTOS E NÃO O MELHOR DOS MEDICAMENTOS MAIS BARATOS

CONSELHO NACIONAL DE ÉTICA PARA AS CIÊNCIAS DA VIDA

64/CNECV/2012

CONSELHO NACIONAL DE ÉTICA PARA AS CIÊNCIAS DA VIDA

PARECER SOBRE UM MODELO DE DELIBERAÇÃO PARA FINANCIAMENTO DO CUSTO DOS MEDICAMENTOS

CNECV

CONSELHO NACIONAL DE ÉTICA PARA AS CIÊNCIAS DA VIDA

D. Conclusões

2. O CNECV recomenda que, nas decisões sobre racionalização de custos, esteja patente que as opções fundamentais serão entre os "mais baratos dos melhores" (fármacos de comprovada efectividade) e não sobre os "melhores dos mais baratos".

12. Em qualquer caso, o CNECV tem como essencial que tudo o que se faça não pode de modo algum pôr em causa a relação de confiança e de aliança terapêutica entre os doentes e os profissionais de saúde.

II)- OS PROBLEMAS EMERGENTES: A MULTIRRESISTÊNCIA AOS ABS

O PRIMEIRO ALERTA!!!

ANNALS OF THE NEW YORK ACADEMY OF SCIENCES
Issue: *Antimicrobial Therapeutics Reviews*

The risk/benefit of predicting a post-antibiotic era: Is the alarm working?

Tom Fowler,[1,2] David Walker,[3,b] and Sally C. Davies[3,a]
[1]Field Epidemiology Service–West Midlands, Public Health England, Birmingham, United Kingdom. [2]Department of Public Health, Epidemiology and BiostatisticsUniversity of Birmingham, Birmingham, United Kingdom. [3]Office of the Chief Medical Officer, Department of Health, London, United Kingdom

Address for correspondence: Tom Fowler, Field Epidemiology Service – West Midlands, Public Health England, Birmingham, B3 2PW, United Kingdom. Tom.Fowler@nhs.net

BAD BUGS, NO DRUGS

As Antibiotic Discovery Stagnates ...
A Public Health Crisis Brews

IDSA
Infectious Diseases Society of America

July 2004

Journal of Paediatrics and Child Health

doi:10.1111/jpc.12032

VIEWPOINT

Beginning and possibly the end of the antibiotic era

Shai Ashkenazi[1,2,3]
[1]Department of Paediatrics A, Schneider Children's Medical Center of Israel, Petach Tikva; [2]Sackler Faculty of Medicine and [3]Felsenstein Medical Research Center, Tel Aviv University, Tel Aviv, Israel

BAD BUGS, NO DRUGS

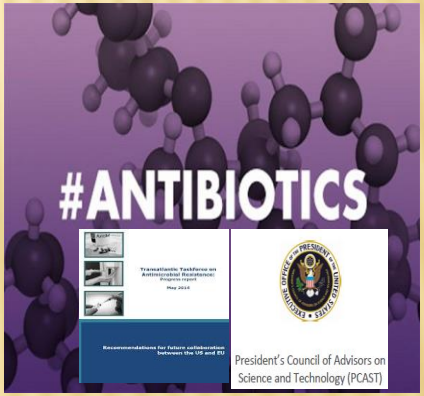
As Antibiotic Discovery Stagnates ...
A Public Health Crisis Brews

"Infectious diseases physicians are alarmed by the prospect that effective antibiotics may not be available to treat seriously ill patients in the near future. There simply aren't enough new drugs in the pharmaceutical pipeline to keep pace with drug-resistant bacterial infections, so-called 'superbugs.'"

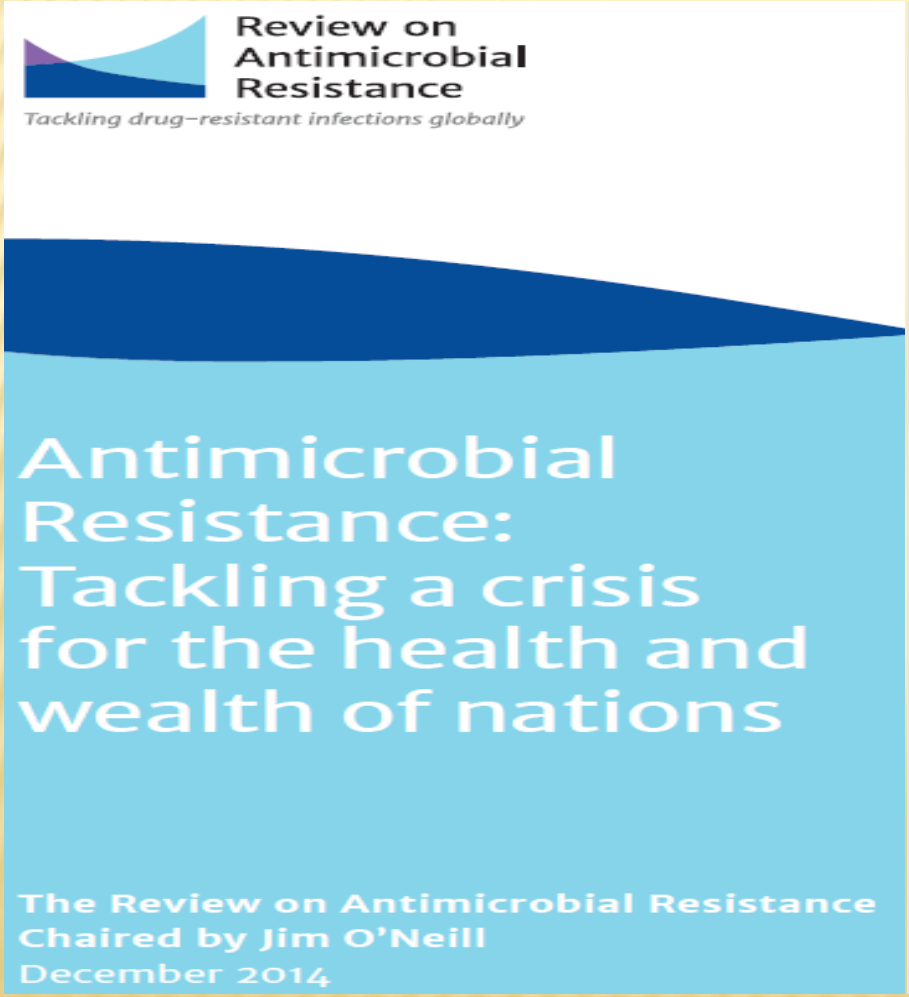
Joseph R. Dalovisio, MD
IDSA President

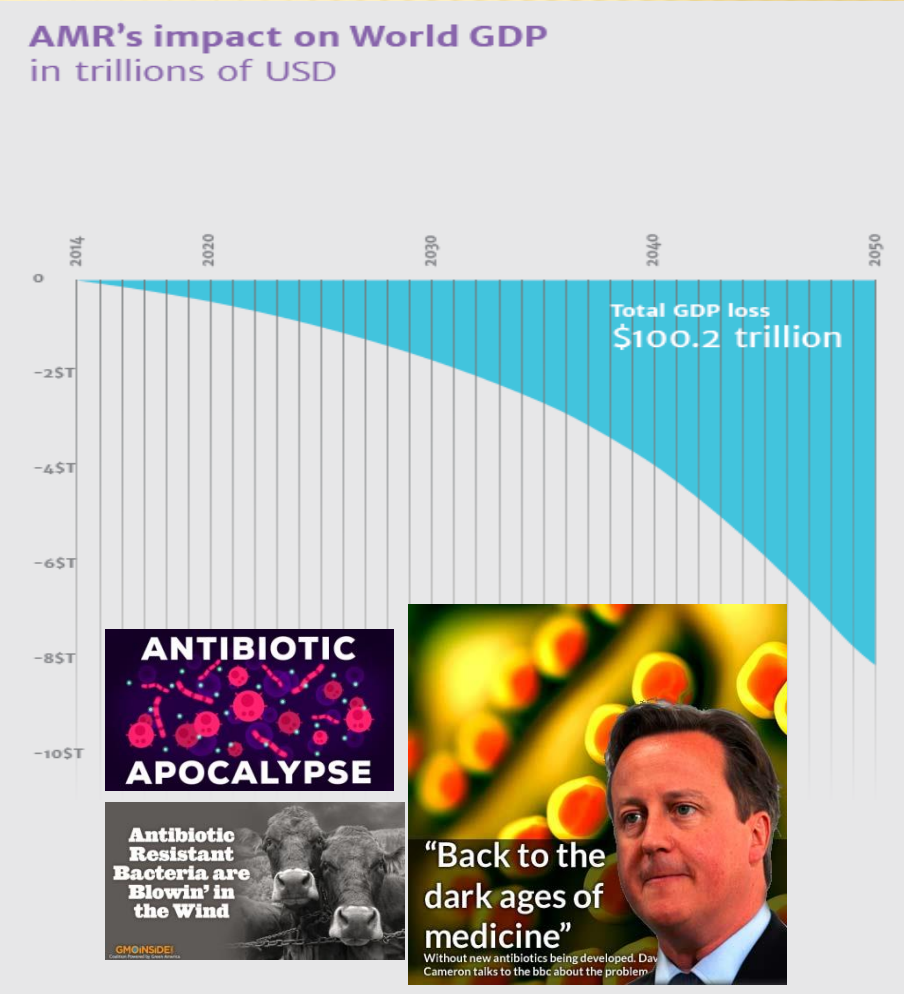
OS ENORMES CUSTOS ASSOCIADOS ...

- Impacto da Multirresistência aos ABs (Relatórios CDC e TATFAR, 2014)
  - 20–35 biliões USD/ano (perdas diretas)
  - 35 biliões USD/ano (perdas de produtividade)
  - 8 milhões de dias d internamento hospitalar
  - 2 milhões de pessoas infetadas / ano
  - 23 - 99.000 mortes / ano nos EUA
  - Financiamento público na investigação de novos antibióticos insuficiente: 450 milhões USD/ano
  - Na CEE: 25 - 175.000 pessoas morrem / ano

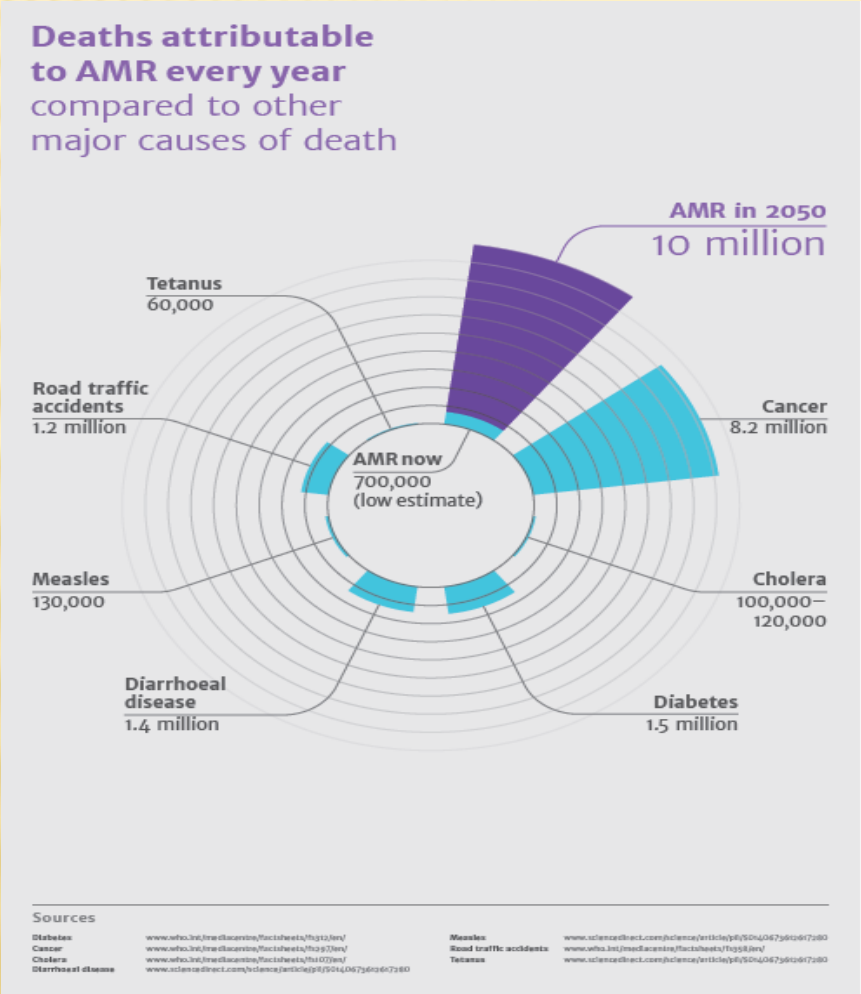


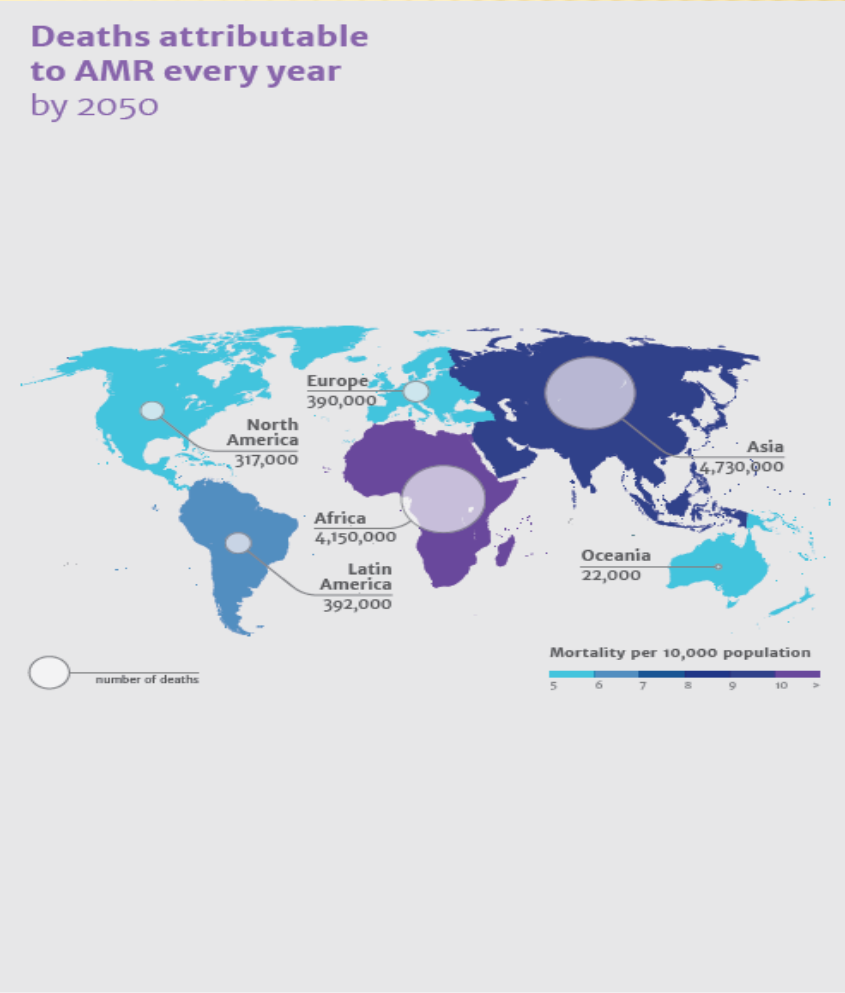
… QUE SE REFLETE SOBRE A RIQUEZA DOS PAÍSES …



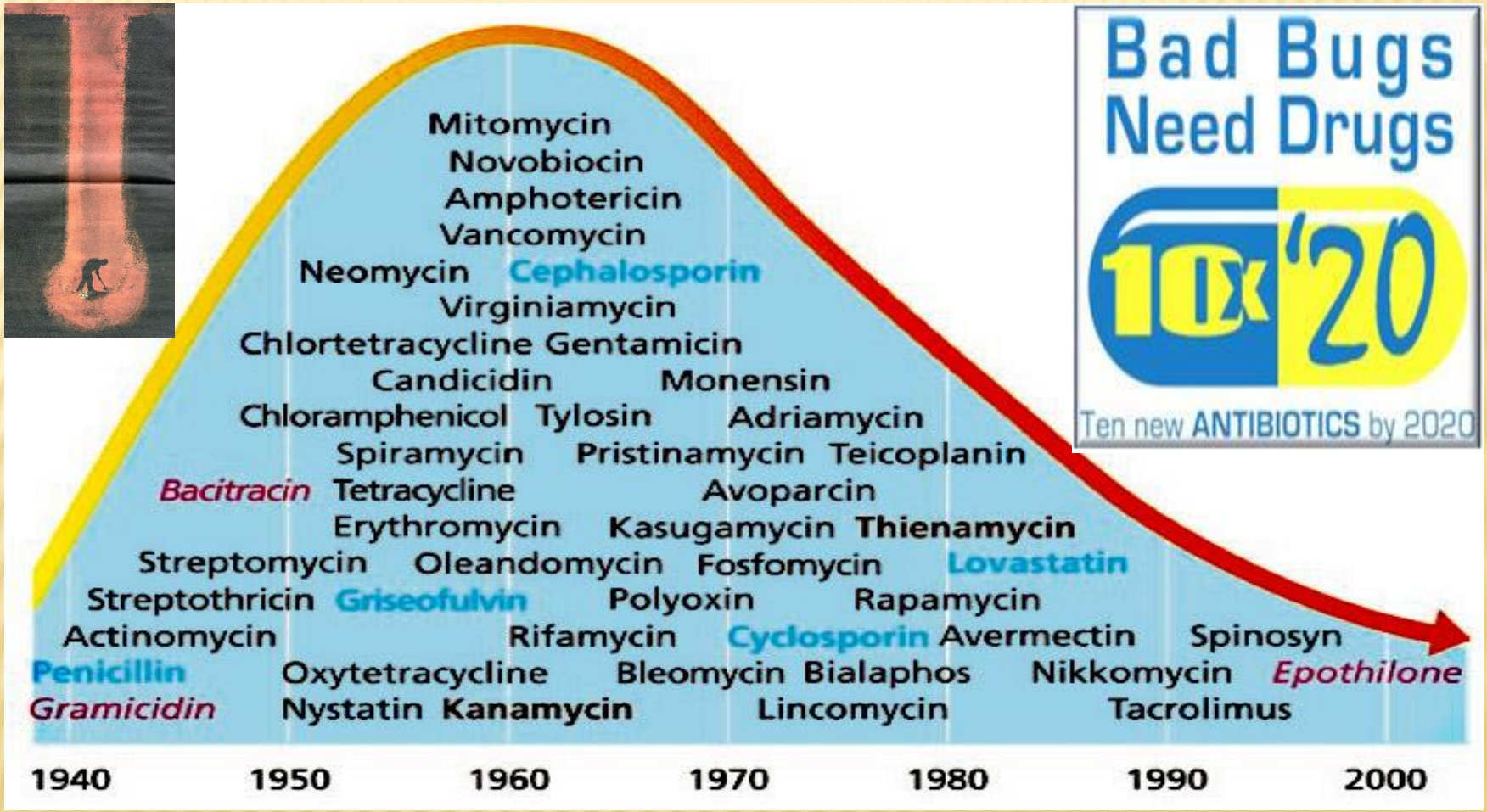


… E COM UM ENORME IMPACTO PREVISTO NA MORTALIDADE GLOBAL A PRAZO!!!





A ESCASSEZ NOVOS ANTIBIÓTICOS EM DESENVOLVIMENTO ATÉ AO FIM DO SEC. XX...



... QUE NÃO FOI RESOLVIDA NA PRIMEIRA DÉCADA DO SEC. XXI ...

The Antibiotic Resistance Crisis

Part 1: Causes and Threats

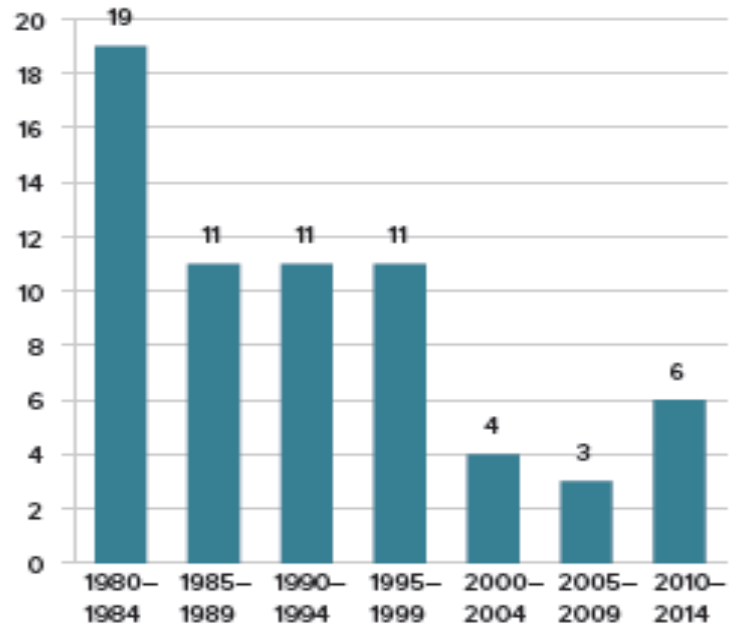
C. Lee Ventola, MS

The Antibiotic Resistance Crisis

Part 2: Management Strategies and New Agents

C. Lee Ventola, MS

Figure 3 Number of Antibacterial New Drug Application Approvals Versus Year Intervals

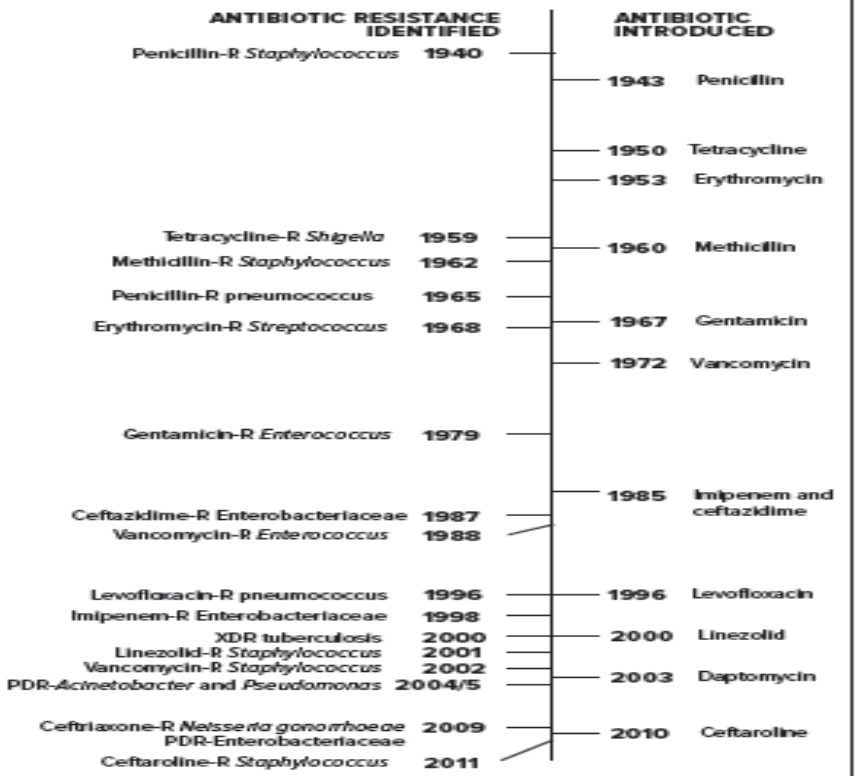


The number of new antibiotics developed and approved has decreased steadily over the past three decades (although four new drugs were approved in 2014), leaving fewer options to treat resistant bacteria.

* Drugs are limited to systemic agents. Data courtesy of the CDC[5] and the FDA Center for Drug Evaluation and Research.

… QUE NÃO PERMITE RESPONDER AO PROBLEMA DAS BACTÉRIAS MULTIRESISTENTES …

Figure 1 Developing Antibiotic Resistance: A Timeline of Key Events[5]



PDR = pan-drug-resistant; R = resistant; XDR = extensively drug-resistant

Dates are based upon early reports of resistance in the literature. In the case of pan-drug-resistant *Acinetobacter* and *Pseudomonas*, the date is based upon reports of health care transmission or outbreaks. Note: penicillin was in limited use prior to widespread population usage in 1943.

Table 1 CDC Assessment of Antibacterial Resistance Threats[5]

Urgent Threats
• *Clostridium difficile*
• Carbapenem-resistant Enterobacteriaceae (CRE)
• Drug-resistant *Neisseria gonorrhoeae*
Serious Threats
• Multidrug-resistant *Acinetobacter*
• Drug-resistant *Campylobacter*
• Fluconazole-resistant *Candida* (a fungus)
• Extended spectrum beta-lactamase-producing Enterobacteriaceae (ESBLs)
• Vancomycin-resistant Enterococci (VRE)
• Multidrug-resistant *Pseudomonas aeruginosa*
• Drug-resistant nontyphoidal *Salmonella*
• Drug-resistant *Salmonella* Typhimurium
• Drug-resistant *Shigella*
• Methicillin-resistant *Staphylococcus aureus* (MRSA)
• Drug-resistant *Streptococcus pneumoniae*
• Drug-resistant tuberculosis
Concerning Threats
• Vancomycin-resistant *Staphylococcus aureus* (VRSA)
• Erythromycin-resistant Group A *Streptococcus*
• Clindamycin-resistant Group B *Streptococcus*

... A RESPOSTA NO 2ª DÉCADA DO SEC XXI

The Antibiotic Resistance Crisis, Part 2: Management Strategies and New Agents

Table 1 CDC's Antibiotic Resistance and Antibiotic-Resistant Infections Tracking Platform[5]

Tracking Networks	Data Collected	Resistant Bacteria/Fungi*
Emerging Infections Program (EIP), which has three main elements: • **ABCs:** Active Bacterial Core surveillance • **HAIC:** Healthcare-Associated Infections—Community Interface • **FoodNet:** Foodborne Diseases Active Surveillance Network	A network of public health/academic/hospital collaborations in 10 states. It provides access to bacterial and fungal samples for testing and detailed clinical case data. The three main EIP programs collect different types of resistance data: • **ABCs** provides clinical information and resistance data for bacteria that cause infections predominantly in the community. • **HAIC** provides clinical information and resistance data for bacteria and fungi that cause infections at the intersection of health care and the general community. • **FoodNet** supplies clinical and epidemiologic data on some human isolates in the National Antimicrobial Resistance Monitoring System (NARMS).	**ABCs** • *Streptococcus pneumoniae* • Groups A and B *Streptococcus* • Methicillin-resistant *Staphylococcus aureus* **HAIC** • *Clostridium difficile* • *Candida* (a fungus) • Carbapenem-resistant Enterobacteriaceae • Multiple-drug-resistant *Acinetobacter* **FoodNet:** (see NARMS list below)
National Antimicrobial Resistance Monitoring System (NARMS)	A national public health surveillance system that tracks changes in the susceptibility of foodborne and other enteric bacteria to antibiotics of human and veterinary medical importance, NARMS is a collaboration among the CDC, FDA, USDA, and state and local health departments. CDC tests bacterial isolates from humans, while FDA and USDA test isolates from retail meats and food animals.	• *Salmonella* • Campylobacter • Shigella
National Healthcare Safety Network (NHSN)	A system that collects and provides data on infections and drug resistance in health care settings. Since NHSN collects data directly from health care facilities, it can provide facility-level information on health care-associated infections and antibiotic resistance (and, in the future, on antibiotic use).	• *S. aureus* • *Enterococcus* • Enterobacteriaceae • *Acinetobacter* • *Pseudomonas aeruginosa* • *Candida*
Gonococcal Isolate Surveillance Program (GISP)	A program to track antibiotic resistance data for gonococcal isolates. Isolates are collected from sexually transmitted disease clinics in approximately 28 cities.	*Neisseria gonorrhoeae*
National Tuberculosis Surveillance System (NTSS)	National Electronic Disease Surveillance System–based reporting of tuberculosis cases, including resistance data. Public health departments from 50 states and the U.S. territories contribute data.	*Mycobacterium tuberculosis*

* ABCs also includes surveillance for *Neisseria meningitidis* and *Haemophilus influenzae*. NARMS also includes surveillance for *E. coli* O157 and *Vibrio* (non-*V. cholerae*).

CDC = Centers for Disease Control and Prevention; FDA = Food and Drug Administration; USDA = U.S. Department of Agriculture

The Antibiotic Resistance Crisis, Part 2: Management Strategies and New Agents

Table 2 Antibiotics Approved Since 2005[5,20–23]

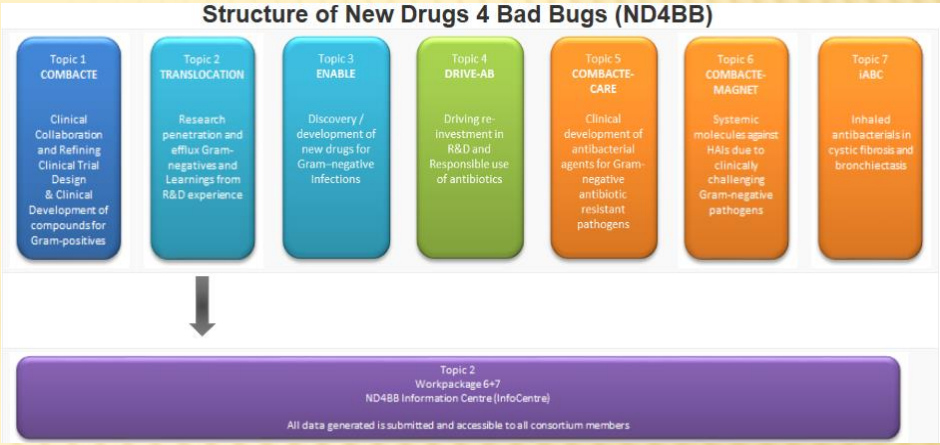
Drug Name	Year Approved	Drug Class	Indications*
Tigecycline (Tygacil, Pfizer)	2005	Tetracycline	Patients 18 years of age and older with: • cSSSIs • cIAIs • CABP
Doripenem (Doribax. Shionogi)	2007	Carbapenem	Adult patients with: • cIAIs • cUTIs, including pyelonephritis
Telavancin (Vibativ, Theravance Biopharma)	2008	Glycopeptide	Adult patients with: • Hospital-acquired and ventilator-associated bacterial pneumonia • cSSSIs
Ceftaroline (Teflaro, Cerexa)	2010	Cephalosporin	Patients with:† • CABP • ABSSSIs
Tedizolid (Sivextro, Cubist Pharmaceuticals)	2014	Oxazolidinone	Adult patients with ABSSSIs
Dalbavancin (Dalvance, Durata Therapeutics)	2014	Glycopeptide	Adult patients with ABSSSIs
Oritavancin (Orbactiv, Medicines Company)	2014	Glycopeptide	Adult patients with ABSSSIs
Ceftolozane/tazobactam (Zerbaxa, Cubist Pharmaceuticals)	2014	Cephalosporin/beta-lactamase inhibitor	Adult patients with: • cIAIs, in combination with metronidazole • cUTIs, including pyelonephritis
Ceftazidime/avibactam (Avycaz, Cerexa Inc.)	2015	Cephalosporin/beta-lactamase inhibitor	Adult patients with: • cIAIs, in combination with metronidazole • cUTIs, including pyelonephritis

ABSSSIs = acute bacterial skin and skin structure infections; CABP = community-acquired bacterial pneumonia; cIAIs = complicated intra-abdominal infections; cSSSIs = complicated skin and skin structure infections; cUTIs = complicated urinary tract infections

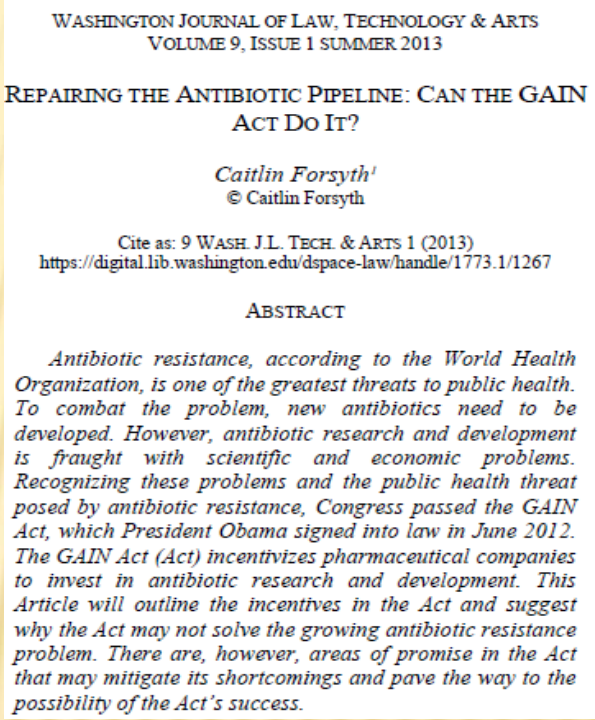
* Caused by designated susceptible bacteria. See prescribing information for these and other important details.

† Safety and effectiveness in pediatric patients have not been established.

ATRAVÉS DA COOPERAÇÃO ENTRE DIVERSOS ORGANISMOS OFICIAIS E PRIVADOS A NÍVEL INTERNACIONAL …



… COMO NO CASO DO TETFAR (USA/CEE)



WASHINGTON JOURNAL OF LAW, TECHNOLOGY & ARTS
VOLUME 9, ISSUE 1 SUMMER 2013

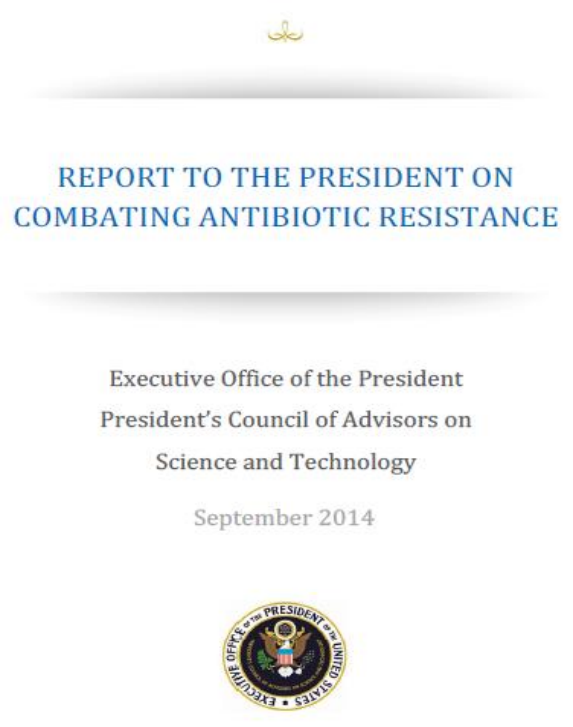
REPAIRING THE ANTIBIOTIC PIPELINE: CAN THE GAIN ACT DO IT?

Caitlin Forsyth[1]
© Caitlin Forsyth

Cite as: 9 WASH. J.L. TECH. & ARTS 1 (2013)
https://digital.lib.washington.edu/dspace-law/handle/1773.1/1267

ABSTRACT

Antibiotic resistance, according to the World Health Organization, is one of the greatest threats to public health. To combat the problem, new antibiotics need to be developed. However, antibiotic research and development is fraught with scientific and economic problems. Recognizing these problems and the public health threat posed by antibiotic resistance, Congress passed the GAIN Act, which President Obama signed into law in June 2012. The GAIN Act (Act) incentivizes pharmaceutical companies to invest in antibiotic research and development. This Article will outline the incentives in the Act and suggest why the Act may not solve the growing antibiotic resistance problem. There are, however, areas of promise in the Act that may mitigate its shortcomings and pave the way to the possibility of the Act's success.



REPORT TO THE PRESIDENT ON COMBATING ANTIBIOTIC RESISTANCE

Executive Office of the President
President's Council of Advisors on Science and Technology

September 2014

OS *"TIMELINES"* QUE IMPORTA TER CONSIDERAR !!!

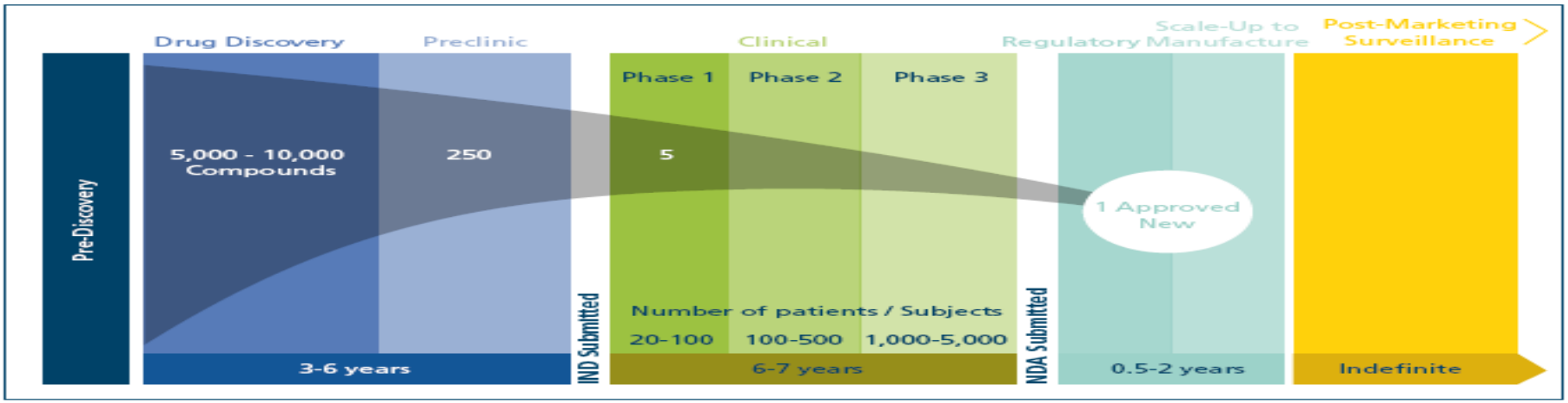


Figure 6: With the cost of developing a medicine estimated at $1.2 billion, attrition rates in pharmaceutical R&D are unsustainable. Source CBO, Research and Development in the Pharmaceutical Industry, 2006.

Annex E: Timeline of the Transatlantic Task Force on Antimicrobial Resistance (TATFAR), 2009-2013

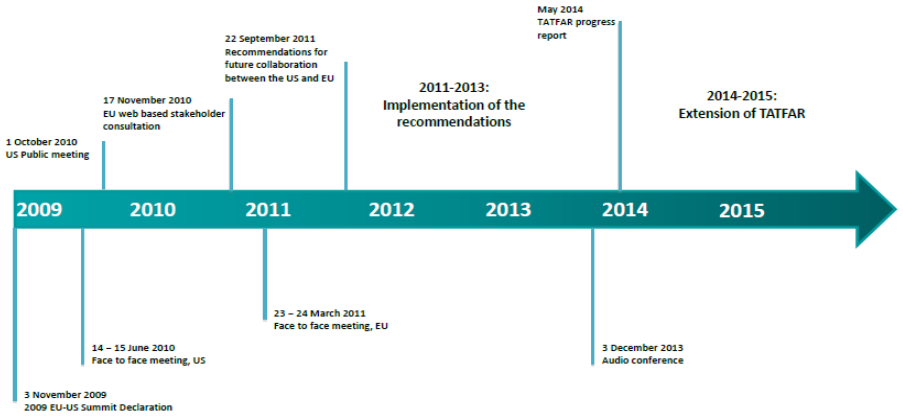
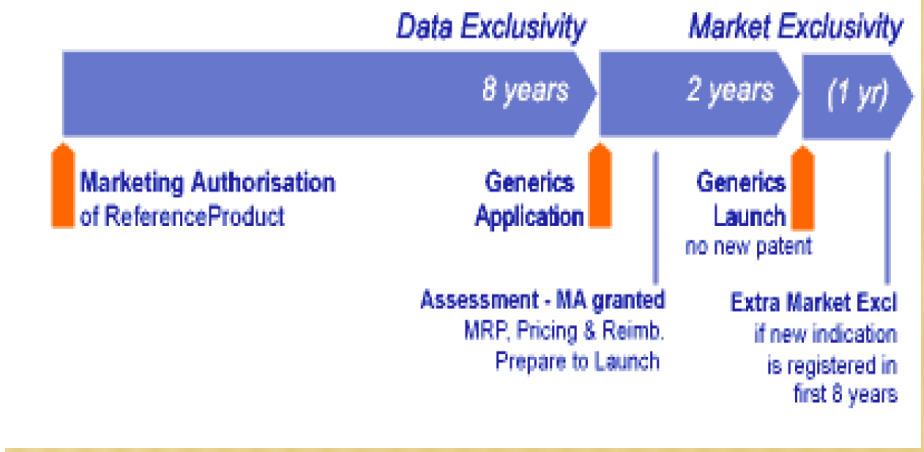


Figure 6.2.1 EMEA 8+2(+1) arrangements in the EU [290#1215].



É BOM SEMPRE LEMBRAR!!!

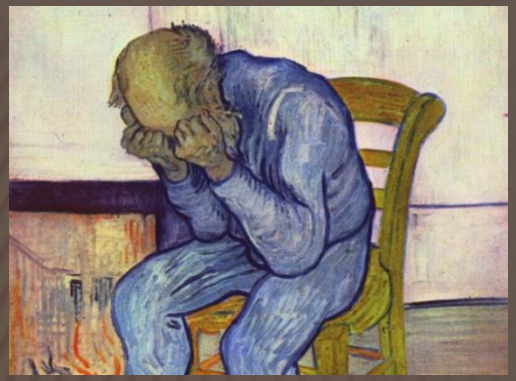
www.medscape.com

Infectious Diseases Outlook for 2016: John Bartlett's Predictions

John G. Bartlett, MD

May 10, 2016

- "Guidelines" internacionais recomendam
  - Sinusite Aguda: esperar 1 semana antes de iniciar ABs
  - Bronquite aguda: não deve ser TT de início c/ ABs
  - Faringite aguda: c/ Penicilina G e apenas nos casos c/ Ag + p/ o *Estreptococus Pyogenes*
  - Síndromes gripais e as constipações não devem ser tratadas de início c/ ABs
  - ITUs assintomáticas também não devem ser tratadas c/ ABs



III)- AS DOENÇAS EMERGENTES (E REEMERGENTES): AS INFEÇÕES TRANSMITIDAS POR VETORES E ZOONOSES

A CONSTATAÇÃO DE QUE TODOS OS FATORES ENVOLVIDOS ESTÃO INTERLIGADOS ...

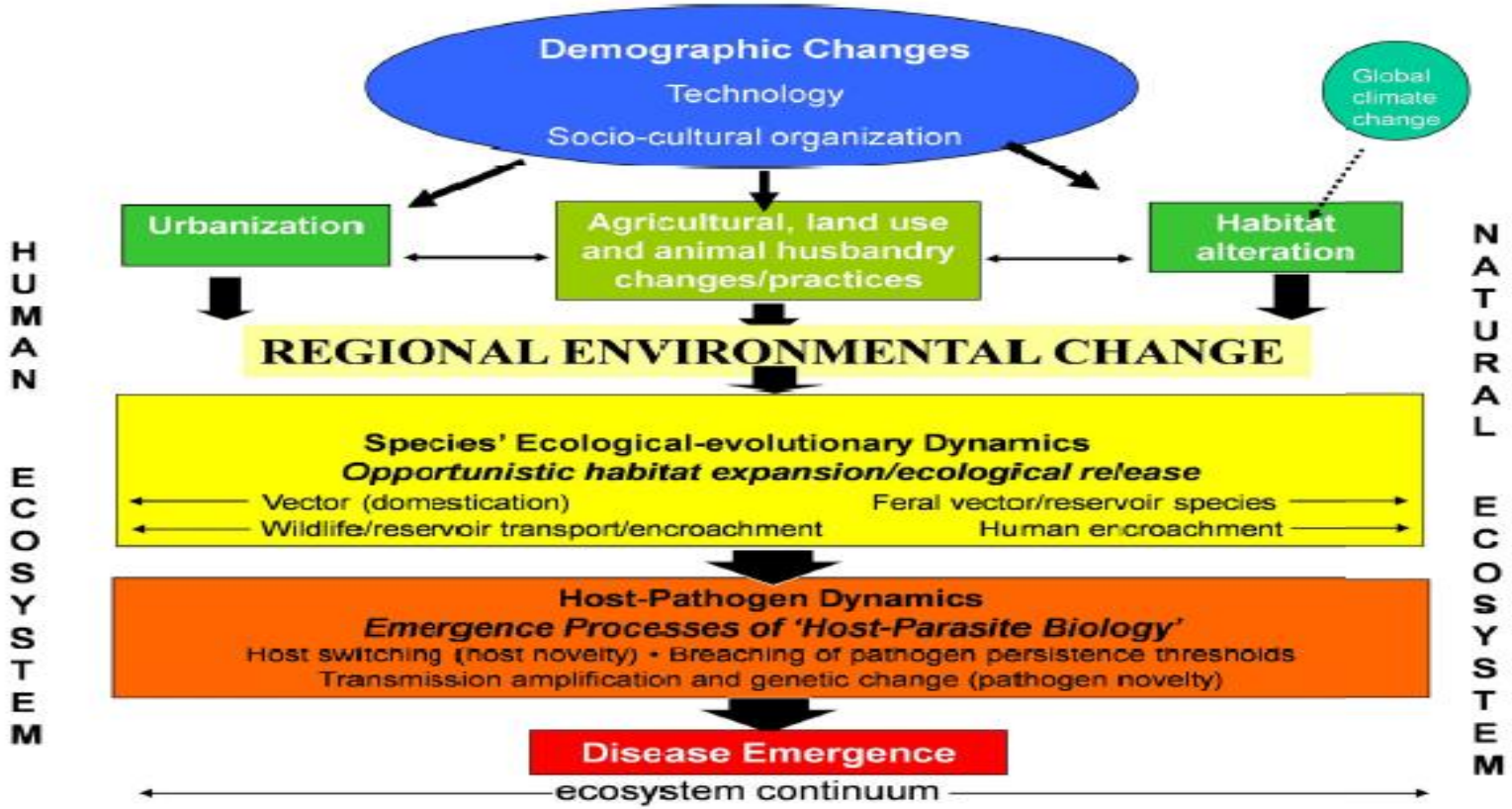


FIGURE WO-5 Epidemiological effects of urbanization and environmental change.
SOURCE: Adapted from Wilcox and Gubler (2005) with permission from The Japanese Society for Hygiene.

… SOBRETUDO NO QUE SE REFERE ÀS DOENÇAS EMERGENTES …

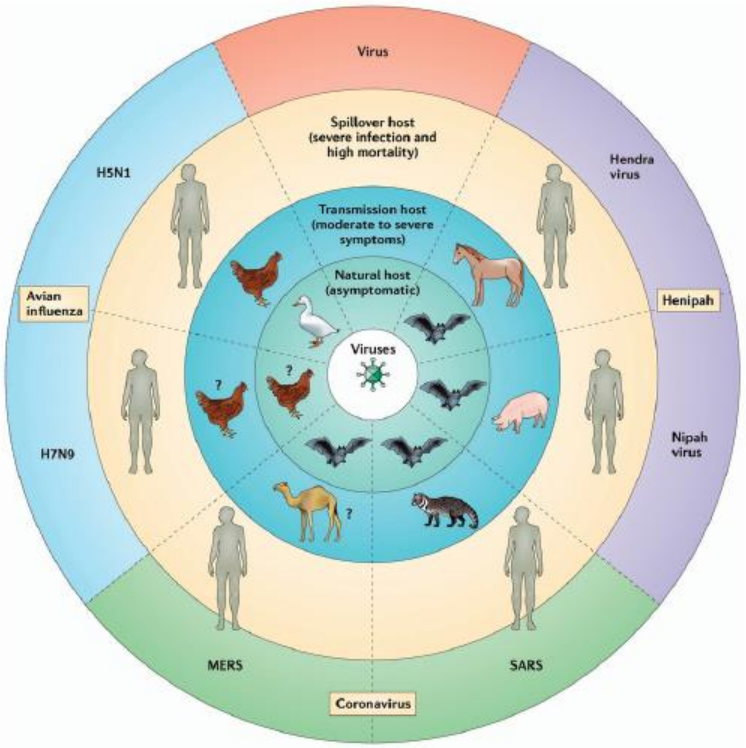


FIGURE A6-2 The outcome of disease severity is influenced by the host–pathogen interaction. Many zoonotic agents cause little or no signs of disease in their natural host such as wild birds and bats, while transmission hosts may present symptoms ranging from moderate (such as pigs for AI) to severe (such as horses for HeV) signs. The terminal or spillover host, such as humans in the case of H5N1 and HeV infections, can present with very severe symptoms and high mortality rates. For some of the most recently emerging EIDs such as H7N9 and MERS-CoV, natural and transmission hosts have not been identified.
SOURCE: Bean et al., 2013.

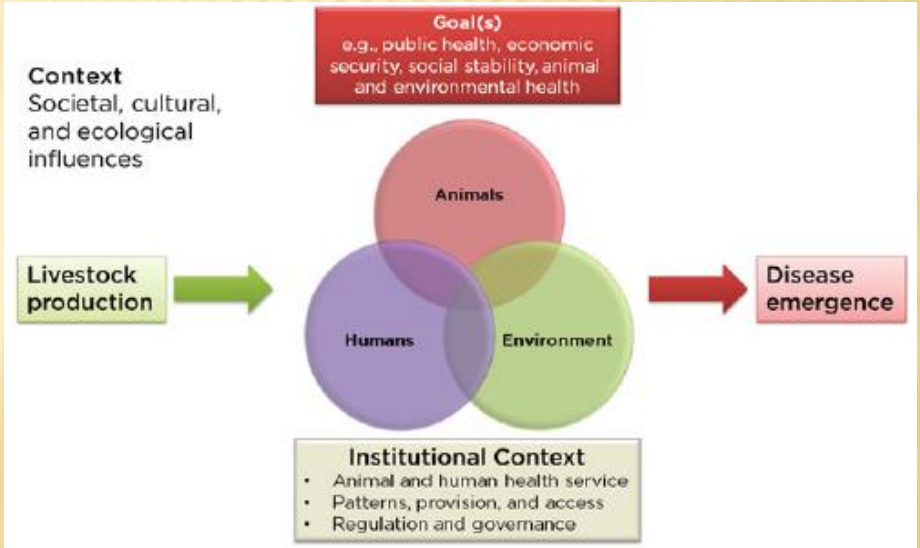


FIGURE A8-5 A systems perspective on disease emergence.

... E PARTICULARMENTE NO CASOS DAS INFEÇÕES VIRAIS ...

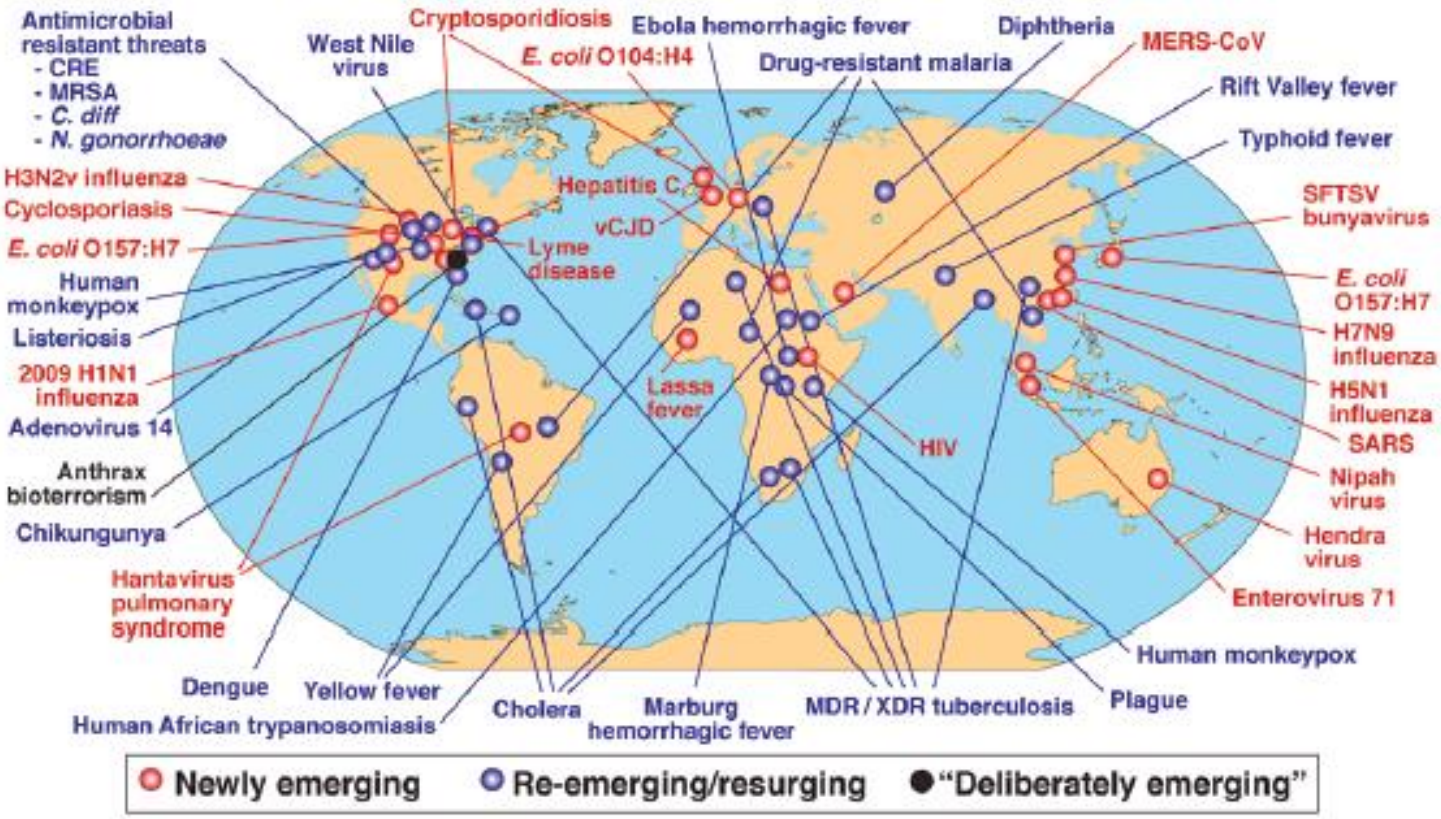


FIGURE WO-1 Global examples of emerging and reemerging infectious diseases.
SOURCE: Morens et al., 2004.

... QUE APRESENTARAM, AO LONGO DO TEMPO, UM GRANDE IMPACTO EPIDEMIOLÓGICO!!!

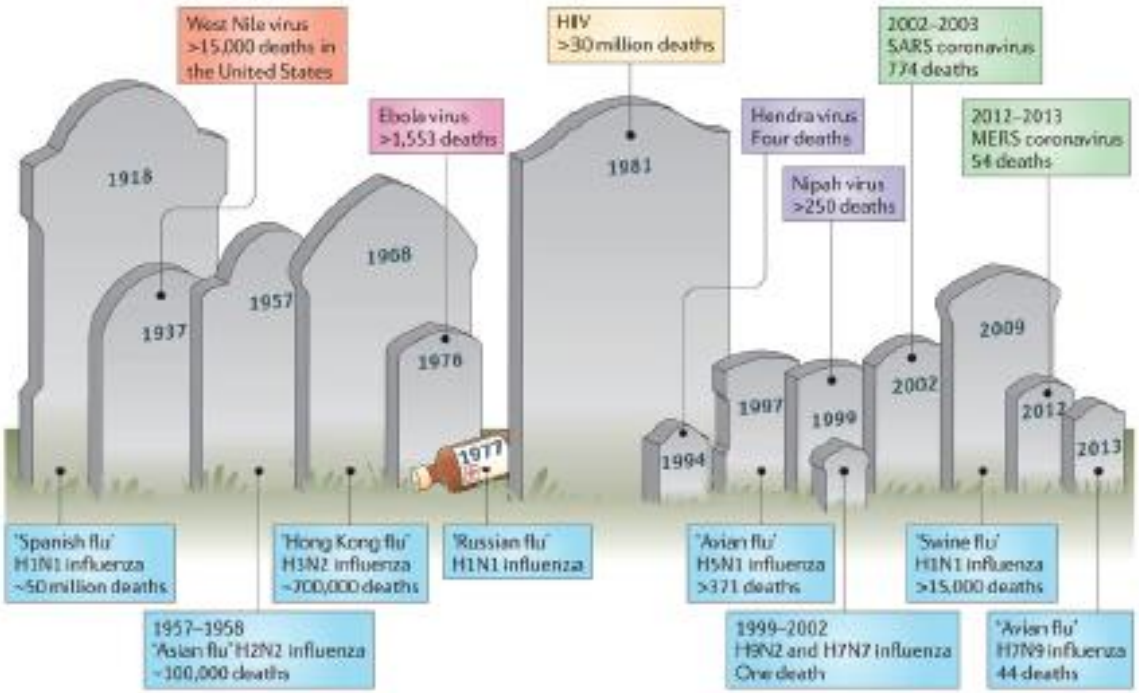


FIGURE WO-2 Emergence of zoonoses. Over the past century, humanity has witnessed the emergence of numerous zoonotic infections that have resulted in varying numbers of human fatalities. Influenza viruses that originate from birds account for an important proportion of these deaths, and recently many new zoonotic viruses that originate in bats, such as Hendra virus, Nipah virus, and the SARS coronavirus, have caused outbreaks with high mortality rates.

NOTE: As of June 2, 2014, the Centers for Disease Control and Prevention (CDC) reports that there were 39,557 cases of West Nile virus in the United States resulting in 1,668 deaths between 1999 and 2013. Source: http://www.cdc.gov/westnile/resources/pdfs/cummulative/99_2013_CasesAndDeathsClinicalPresentationHumanCases.pdf (accessed February 19, 2015).

SOURCE: Bean et al., 2013.

O ENORME IMPACTO ECONÓMICO DAS INFEÇÕES EMERGENTES

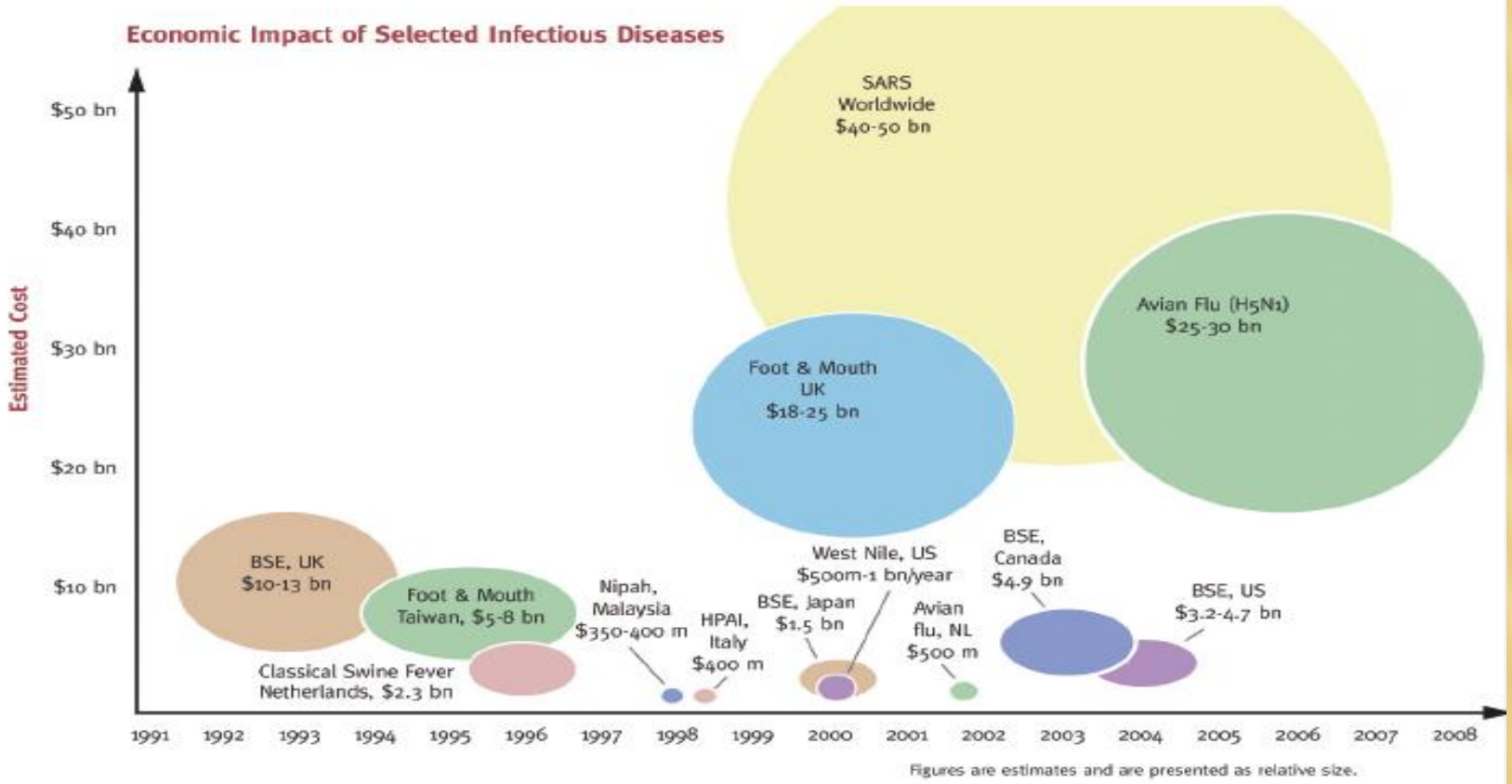
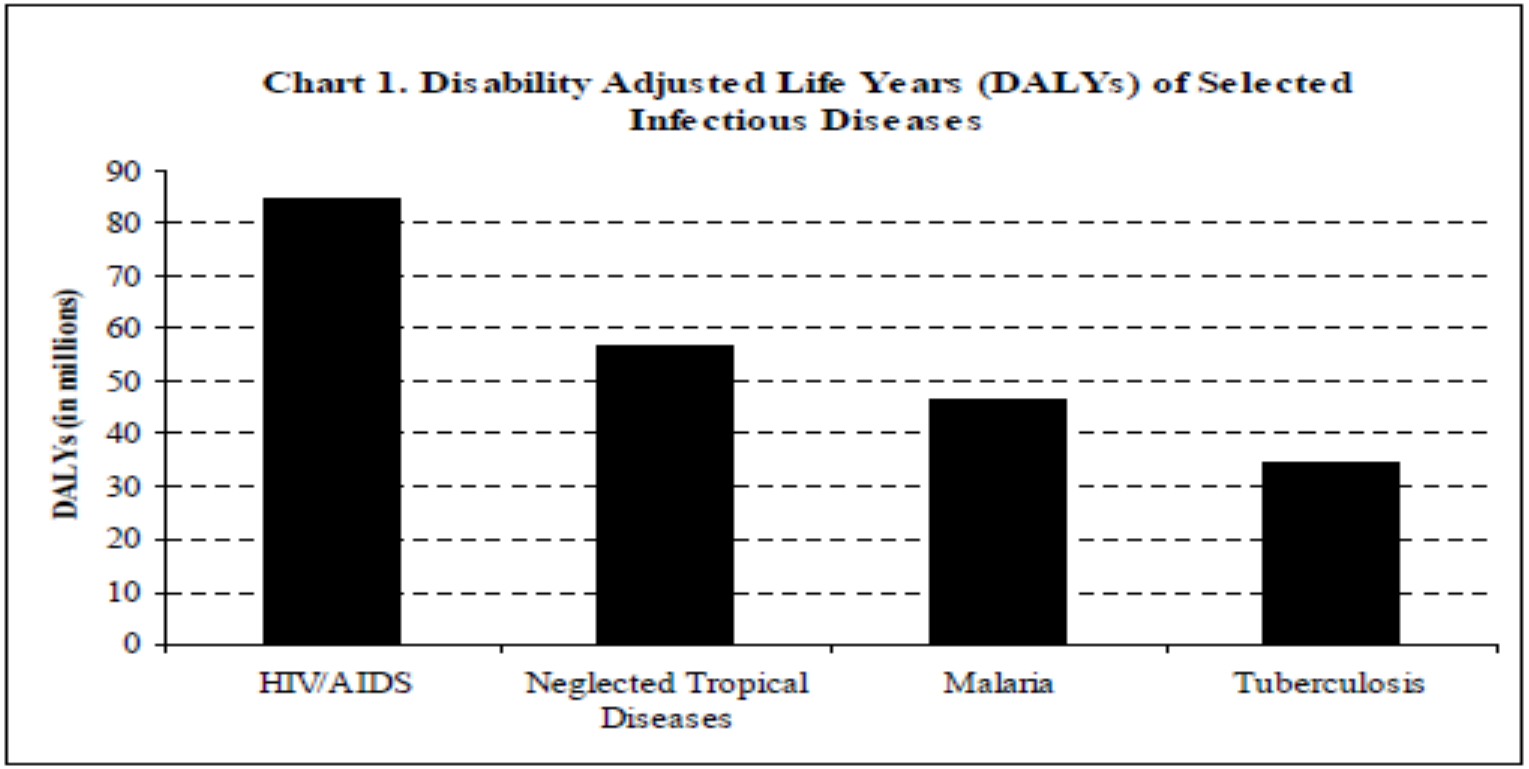


FIGURE 3-2 Economic impacts of selected infectious diseases.
SOURCE: Reprinted with permission from Bio-era.

A IMPORTÂNCIA DAS DENOMINADAS DOENÇAS NEGLIGENCIADAS ...

The unquestionable association between NTDs and poverty has made their elimination a necessity in order to achieve the Millennium Development Goals (MDGs).



* Data taken Hotez PJ, Molyneux DH, Fenwick A et al. Control of Neglected Tropical Diseases. N Engl J Med 2007; 357:1018-1027.

... A SUA DISTRIBUIÇÃO GEOGRÁFICA MUNDIAL

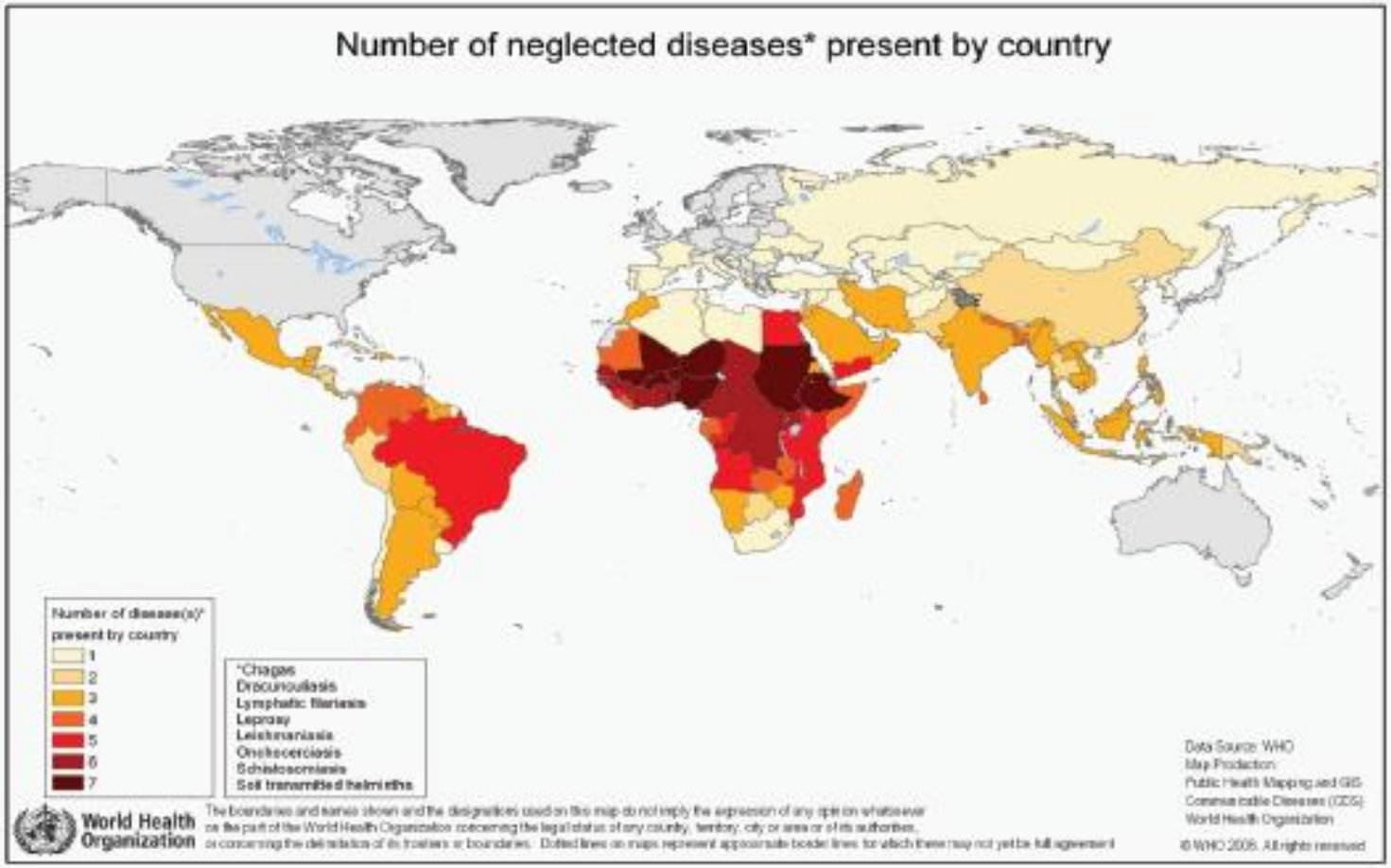


FIGURE A15-4 Global distribution of NTDs.

SOURCE: WHO (2006). *Number of neglected diseases present by country* [map]. Geneva: WHO. Map produced by Public Health Mapping and GIS, Communicable Diseases, WHO (2006). Reprinted with permission from the World Health Organization.

NOVOS MOTIVOS DE PREOCUPAÇÃO!!!

Review

J Vet Sci 2016, 17(1), 1-11 · http://dx.doi.org/10.4142/jvs.2016.17.1.1

JVS

Hepatitis E virus as an emerging zoonotic pathogen

Woo-Jung Park[1], Byung-Joo Park[1], Hee-Seop Ahn[1], Joong-Bok Lee[1], Seung-Yong Park[1], Chang-Seon Song[1], Sang-Won Lee[1], Han-Sang Yoo[2], In-Soo Choi[1,*]

[1]*Department of Infectious Diseases, College of Veterinary Medicine, Konkuk University, Seoul 05029, Korea*
[2]*Department of Infectious Diseases, College of Veterinary Medicine, Seoul National University, Seoul 08826, Korea*

Hepatitis E outbreaks are a serious public health concern in developing countries. The disease causes acute infections, primarily in young adults. The mortality rate is approximately 2%; however, it can exceed 20% in pregnant women in some regions in India. The causative agent, hepatitis E virus (HEV), has been isolated from several animal species, including pigs. HEV genotypes 3 and 4 have been isolated from both humans and animals, and are recognized as zoonotic pathogens. Seroprevalence studies in animals and humans indirectly suggest that HEV infections occur worldwide. The virus is primarily transmitted to humans via undercooked animal meats in developed countries. Moreover, transfusion- and transplantation-mediated HEV infections have recently been reported. This review summarizes the general characteristics of hepatitis E, HEV infection status in animals and humans, the zoonotic transmission modes of HEV, and HEV vaccine development status.

Keywords: hepatitis E, hepatitis E virus, pig, transmission, zoonotic pathogen

NOVAS REALIDADES EPIDEMIOLÓGICAS PODEM FAZER DA EXCEÇÃO A REGRA

Furuya-Kanamori et al. BMC Infectious Diseases (2016) 16:84
DOI 10.1186/s12879-016-1417-2

BMC Infectious Diseases

RESEARCH ARTICLE Open Access

Co-distribution and co-infection of chikungunya and dengue viruses

Luis Furuya-Kanamori[1*], Shaohong Liang[2], Gabriel Milinovich[3], Ricardo J. Soares Magalhaes[4,5], Archie C. A. Clements[1], Wenbiao Hu[3], Patricia Brasil[6], Francesca D. Frentiu[7], Rebecca Dunning[8] and Laith Yakob[9]

Abstract

Background: Chikungunya and dengue infections are spatio-temporally related. The current review aims to determine the geographic limits of chikungunya, dengue and the principal mosquito vectors for both viruses and to synthesise current epidemiological understanding of their co-distribution.

Methods: Three biomedical databases (PubMed, Scopus and Web of Science) were searched from their inception until May 2015 for studies that reported concurrent detection of chikungunya and dengue viruses in the same patient. Additionally, data from WHO, CDC and Healthmap alerts were extracted to create up-to-date global distribution maps for both dengue and chikungunya.

Results: Evidence for chikungunya-dengue co-infection has been found in Angola, Gabon, India, Madagascar, Malaysia, Myanmar, Nigeria, Saint Martin, Singapore, Sri Lanka, Tanzania, Thailand and Yemen; these constitute only 13 out of the 98 countries/territories where both chikungunya and dengue epidemic/endemic transmission have been reported.

Conclusions: Understanding the true extent of chikungunya-dengue co-infection is hampered by current diagnosis largely based on their similar symptoms. Heightened awareness of chikungunya among the public and public health practitioners in the advent of the ongoing outbreak in the Americas can be expected to improve diagnostic rigour. Maps generated from the newly compiled lists of the geographic distribution of both pathogens and vectors represent the current geographical limits of chikungunya and dengue, as well as the countries/territories at risk of future incursion by both viruses. These describe regions of co-endemicity in which lab-based diagnosis of suspected cases is of higher priority.

Keywords: Chikungunya, Dengue, Virus, Coinfection, Review

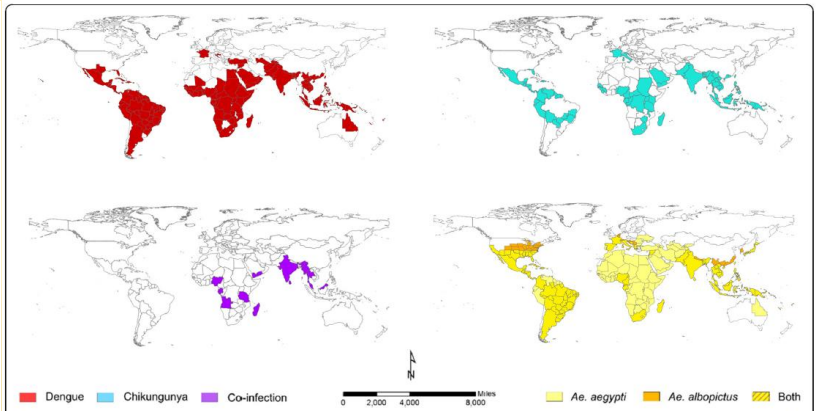


Fig. 1 legend. The global distributions of endemic/epidemic dengue (*top left*) and chikungunya (*top right*) and reports of co-infection (*bottom left*) as well as the principal vectors of both arboviruses, *Aedes aegypti* and *Aedes albopictus* (*bottom right*)

RAPID COMMUNICATIONS

Experimental studies of susceptibility of Italian *Aedes albopictus* to Zika virus

M Di Luca [1 2], F Severini [1 2], L Toma [1], D Boccolini [1], R Romi [1], ME Remoli [3], M Sabbatucci [4], C Rizzo [5], G Venturi [3], G Rezza [3], C Fortuna [3]

1. Unit of Vector-borne Diseases and International Health, Department of Infectious, Parasitic and Immune-Mediated Diseases, Istituto Superiore di Sanità, Rome, Italy
2. These authors contributed equally
3. National Reference Laboratory for Arboviruses, Department of Infectious, Parasitic and Immune-Mediated Diseases, Istituto Superiore di Sanità, Rome, Italy
4. European Programme for Public Health Microbiology Training (EUPHEM), Department of Infectious, Parasitic and Immune-Mediated Diseases, Istituto Superiore di Sanità, Rome, Italy
5. National Center for Epidemiology and Health Promotion, Istituto Superiore di Sanità, Rome, Italy

Correspondence: Claudia Fortuna (claudia.fortuna@iss.it)

AS DOENÇAS DA POBREZA ATINGEM TAMBÉM OS PAÍSES DENOMINADOS DE RICOS...

Zhou et al. Infectious Diseases of Poverty (2016) 5:49
DOI 10.1186/s40249-016-0144-7

Infectious Diseases of Poverty

COMMENTARY Open Access

Surveillance and response systems for elimination of tropical diseases: summary of a thematic series in *Infectious Diseases of Poverty*

Xia Zhou[1,2], Peiling Yap[3,4], Marcel Tanner[3,4], Robert Bergquist[5], Jürg Utzinger[3,4] and Xiao-Nong Zhou[2,6*]

Abstract

The peer-reviewed journal *Infectious Diseases of Poverty* provides a new platform to engage with, and disseminate in an open-access format, science outside traditional disciplinary boundaries. The current piece reviews a thematic series on surveillance-response systems for elimination of tropical diseases. Overall, 22 contributions covering a broad array of diseases are featured – i.e. clonorchiasis, dengue, hepatitis, human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS), H7N9 avian influenza, lymphatic filariasis, malaria, Middle East respiratory syndrome (MERS), rabies, schistosomiasis and tuberculosis (TB). There are five scoping reviews, a commentary, a letter to the editor, an opinion piece and an editorial pertaining to the theme "Elimination of tropical disease through surveillance and response". The remaining 13 articles are original contributions mainly covering (i) drug resistance; (ii) innovation and validation in the field of mathematical modelling; (iii) elimination of infectious diseases; and (iv) social media reports on disease outbreak notifications released by national health authorities. Analysis of the authors' affiliations reveals that scientists from the People's Republic of China (P.R. China) are prominently represented. Possible explanations include the fact that the 2012 and 2014 international conferences pertaining to surveillance-response mechanisms were both hosted by the National Institute of Parasitic Diseases (NIPD) in Shanghai, coupled with P.R. China's growing importance with regard to the control of infectious diseases. Within 4 to 22 months of publication, three of the 22 contributions were viewed more than 10 000 times each. With sustained efforts focusing on relevant and strategic information towards control and elimination of infectious diseases, *Infectious Diseases of Poverty* has become a leading journal in the field of surveillance and response systems in infectious diseases and beyond.

Keywords: Infectious diseases, Tropical diseases, Health systems, Surveillance and response systems, Elimination, People's Republic of China

Journal of Epidemiology and Global Health (2016) xxx, xxx–xxx

ELSEVIER

http:// www.elsevier.com/locate/jegh

REVIEW ARTICLE

Bradford Hill's criteria, emerging zoonoses, and One Health

G.V. Asokan [a,*], Vanitha Asokan [b]

[a] *College of Health Sciences, University of Bahrain, P.O. Box-32038, Bahrain*
[b] *Pediatrics Department, American Mission Hospital, Manama, P.O. Box-1, Bahrain*

Received 1 September 2015; accepted 19 October 2015

KEYWORDS
Disease causation;
Emerging zoonoses;
One Health

Abstract Zoonoses constitute more than 60% of infectious diseases and 75% of emerging infectious diseases. Inappropriate overemphasis of specialization of disciplines has ignored public health. Identifying the causes of disease and determining how exposures are related to outcomes in "emerging zoonoses" affecting multiple species are considered to be the hallmarks of public health research and practice that compels the adoption of "One Health". The interactions within and among populations of vertebrates in the causation and transmissions of emerging zoonotic diseases are inherently dynamic, interdependent, and systems based. Disease causality theories have moved from one or several agents causing disease in a single species, to one infectious agent causing disease in multiple species-emerging zoonoses. Identification of the causative pathogen components or structures, elucidating the mechanisms of species specificity, and understanding the natural conditions of emergence would facilitate better derivation of the causal mechanism. Good quality evidence on causation in emerging zoonoses affecting multiple species makes a strong recommendation under the One Health approach for disease prevention and control from diagnostic tests, treatment, antimicrobial resistance, preventive vaccines, and evidence informed health policies. In the tenets of One Health, alliances work best when the legitimate interests of the different partners combine to prevent and control emerging zoonoses.

© 2015 Ministry of Health, Saudi Arabia. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

… REALIDADE A QUE A VELHA EUROPA NÃO ESCAPA…

PERSPECTIVE

Determinants and Drivers of Infectious Disease Threat Events in Europe

Jan C. Semenza, Elisabet Lindgren, Laszlo Balkanyi, Laura Espinosa, My S. Almqvist, Pasi Penttinen, Joacim Rocklöv

Table 2. Infectious disease threat events detected in Europe, 2008–2013

Threat event category	Definition and examples*
Foodborne and waterborne	All types of diseases caused by the transmission of organisms through food or water (e.g., drinking water, recreational water): salmonellosis, hepatitis A, *Escherichia coli* infection, norovirus infection, shigellosis.
Vectorborne and rodentborne	All vectorborne and rodentborne diseases (epidemics or first autochthonous cases): West Nile fever, malaria, dengue fever, Hantavirus infection.
Other zoonoses	Diseases caused by transmission of organisms through contact with animals or animal discharges: Q fever, cowpox disease, psittacosis.
Vaccine preventable	Main vaccine-preventable diseases that are normally part of the public health system's vaccination programs: measles, pertussis, mumps (boys), rubella (girls).
Multidrug resistance associated	Emerging multidrug-resistant infections of public health concern: carbapenemase-producing *Enterobacteriaceae*, *Klebsiella pneumoniae*.
Healthcare associated	Infections contracted while hospitalized or transmitted through healthcare practices: meningococcal meningitis.
Injection drug use associated	Infections caused by injection drug use: botulism, HIV, anthrax.
Sexually transmitted	Emerging sexually transmitted diseases and increases in incidence of serious complications: meningococcal infections.
Influenza	Seasonal influenza and other pandemic influenzas.
Airborne	Respiratory diseases acquired through transmission of pathogens through air (e.g., particles, droplets): for example, legionellosis. Includes respiratory infections that can be transmitted through air or other pathways, including infections transmitted through aerosols, fomites, or direct contact: Middle East respiratory syndrome coronavirus.

*Examples are purposely not exhaustive and should be considered illustrative.

... COMO NÃO PODERIA DEIXAR DE SER!!!

Table 1. Determinants and drivers of infectious disease threat events, Europe, 2008–2013

Drivers, by group	Examples*
Globalization and environment	
Climate	Temperature, humidity, wind, rainfall. Can have an effect on exposure pathways of foodborne and waterborne diseases or the distribution of vectorborne diseases.
Natural environment	Land cover, vegetation, water ways, oceans, coastlines, water resources, land use, habitats, biodiversity. Can shift the distribution range and influence abundance of vectors (e.g., rodents, mosquitoes, ticks) as well as of host and reservoir animals.
Human-made environment	Urbanization, built environment, infrastructure, industries, intensive agriculture. Can enable propagation and dissemination of pathogens.
Travel and tourism	Movement of populations by automobile, train, ship, airplane. Can enable the importation of vectors, pathogens and infected persons into Europe and their dispersion within Europe.
Migration	Immigrant, emigrant, asylum seeker, settler. Can be vulnerable to or contribute to spread of infectious diseases in origin country, in transit, or in destination country.
Global trade	Import and export of goods and services across international boundaries via ship, airplane, rail, truck. Can result in the exportation or importation (on purpose or involuntarily) of host animals, disease vectors, or pathogens.
Sociodemographic	
Demographic	Population composition with regards to age, income, education. Can be associated with greater health vulnerabilities.
Social inequality	Uneven distribution of resources in society, including income, wealth, rights, privileges, social power, education. Disadvantaged groups can suffer disproportionately from infectious diseases.
Vulnerable groups	Children, premature infants, pregnant women, elderly persons, men who have sex with men, immunocompromised persons. Vulnerability can increase exposure and susceptibility to infectious diseases or decrease access to care and recovery.
Prevention	Childhood vaccination programs, adherence to treatment regimes, appropriate prescription practices. Distrust in prevention efforts can undermine control efforts (e.g., childhood vaccination programs. Neglect of prevention when traveling
Lifestyle	High-risk behavior, such as intravenous drug use or unprotected sex with multiple partners. Can increase exposure and infection rates.
Occupational	Healthcare workers, veterinary and animal care personnel, butchers, farmers, cleaners. Lapses in infection control practices can put healthcare workers at risk.
Terrorism	Intentional release or dissemination of biologic agents. Intentional contamination of drinking water can result in community outbreaks.
Public health systems	
Healthcare system	European healthcare structure for the delivery of health services, including general practitioners, hospitals, clinics. Access to care, medicines, diagnostics, insurance coverage, for example, can affect health outcomes. Healthcare systems contribute to nosocomial infections.
Animal Health	Veterinary services, animal health and welfare measures, intensive livestock practices. High animal densities can promote infectious disease transmission. Infected animals close to human settlements can increase the risk for zoonotic epidemics.
Food and water quality	Agriculture, husbandry, farming, processing, handling, preparation and storage of food, man-made water systems (e.g., cooling towers, hot and cold water systems, spa pools, humidifiers), water treatment and distribution systems. Contamination of drinking and irrigation water sources and water distribution systems can result in both localized and community outbreaks. Contamination of foodstuff along the chain from farm to fork can result in multistate epidemics
Surveillance and reporting failure	Systematic ongoing collection, collation, analysis, and dissemination of infectious disease data. Lapses in surveillance can impede a rapid response to infectious disease outbreaks. In contrast, increased surveillance will contribute to increased awareness and thus result in increased reporting of cases

*Examples are purposely not exhaustive and should be considered illustrative.

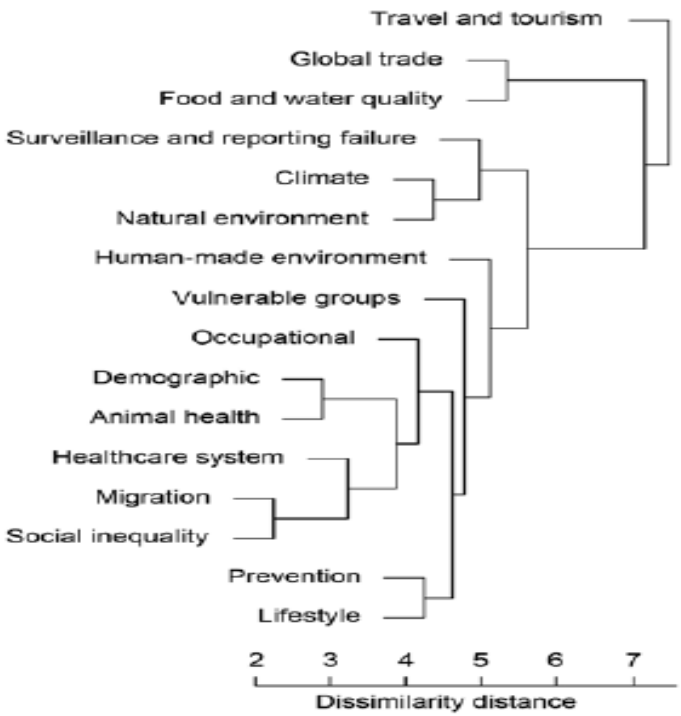


Figure 3. Cluster dendrogram from hierarchical cluster analysis of drivers contributing to observed infectious disease threat events (IDTEs), Europe, 2008–2013. Individual segments (leaves) on the lower part of the tree are more related to each other, as indicated by distances between the branches. Drivers below travel and tourism also occurred less often as underlying drivers of IDTEs and tended to be more contextual in nature. Scale bar indicates dissimilarity distance for drivers, as measured by frequency of pairwise co-occurrence in clusters. Similar drivers (e.g., that co-occurred in outbreaks) are at a close distance, and those that were more independent of other drivers show higher dissimilarity.

A IMPORTÂNCIA DO MEIO AMBIENTE...

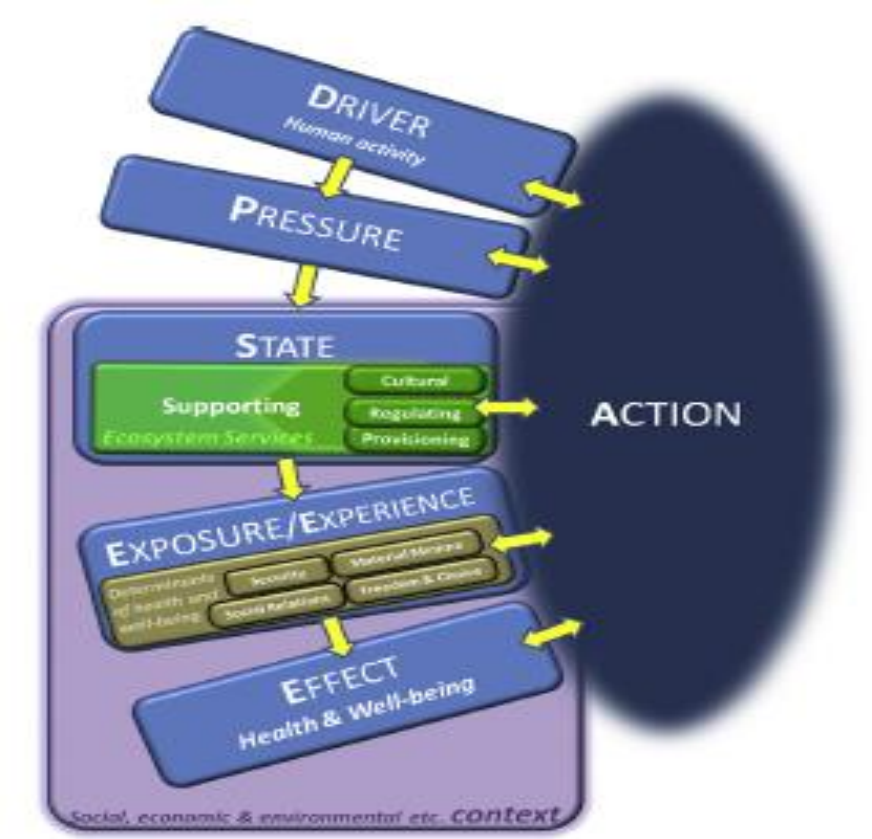


Fig. 1 — Ecosystem-enriched DPSEEA (eDPSEEA) — a conceptual framework for an integrated assessment of human and ecosystem health and ecosystem service provision.

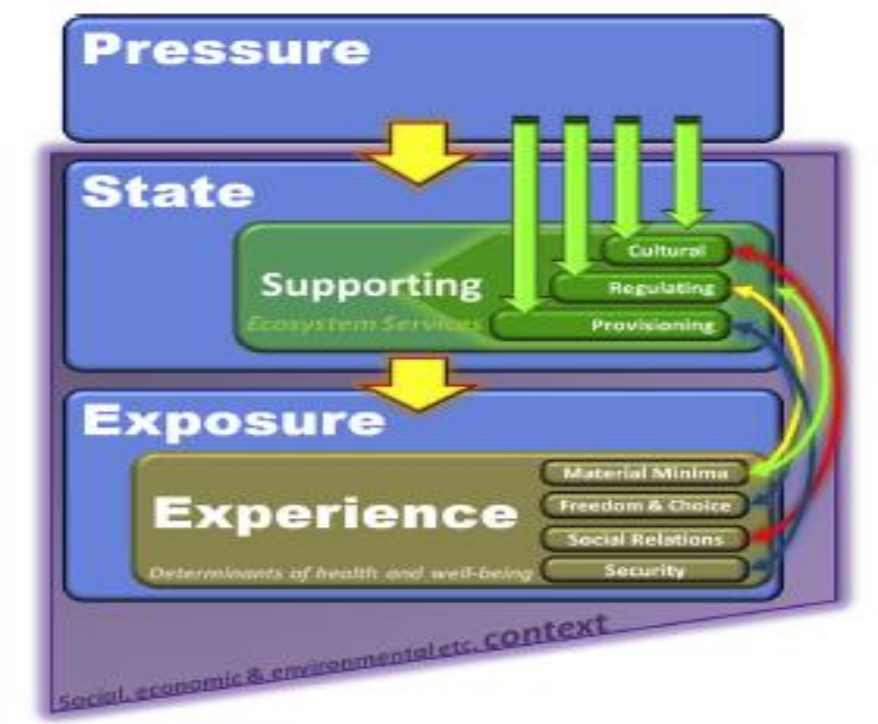


Fig. 2 — Illustrating the potential for feedback loops between Pressure, State and Exposure/Experience which is manifest when considering relationships between ecosystem services and determinants of human health and well-being. Feedbacks are depicted by two-directional arrows, but it should be noted that both positive and negative feedback effects may occur between a wide range of components of the eDPSEEA model.

Reis S, Morris D, Fleming LE, et al: Integrating health and environmental impact analysis. Public Health 2016; 129: 1383-1389

... NOS DIVERSOS PROBLEMAS DE SAÚDE ...

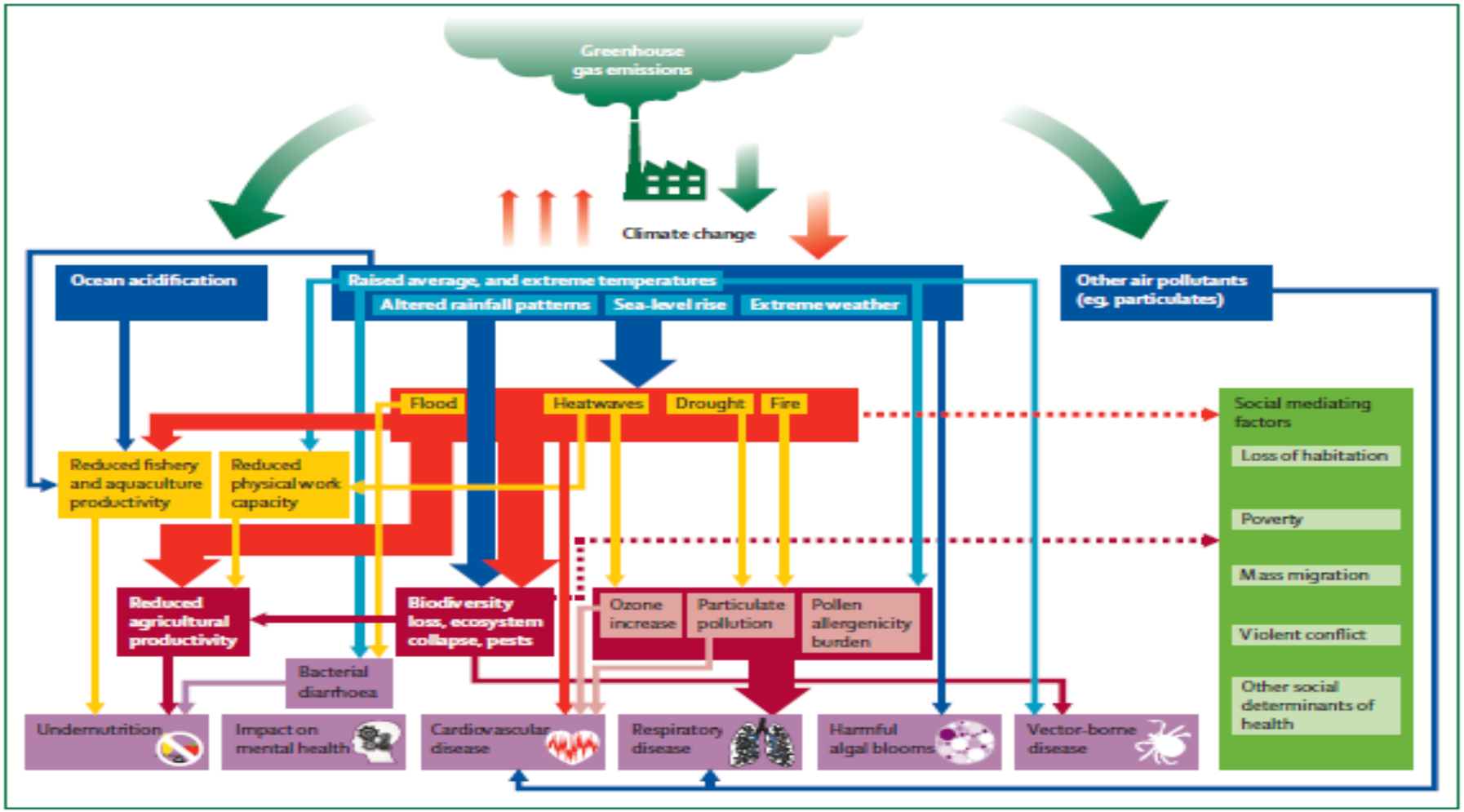


Figure 1: An overview of the links between greenhouse gas emissions, climate change, and health
The causal links are explained in greater detail in the section about climate change and exposure to health risks.

… ATRAVÉS DE EFEITOS DIRETOS E INDIRETOS …

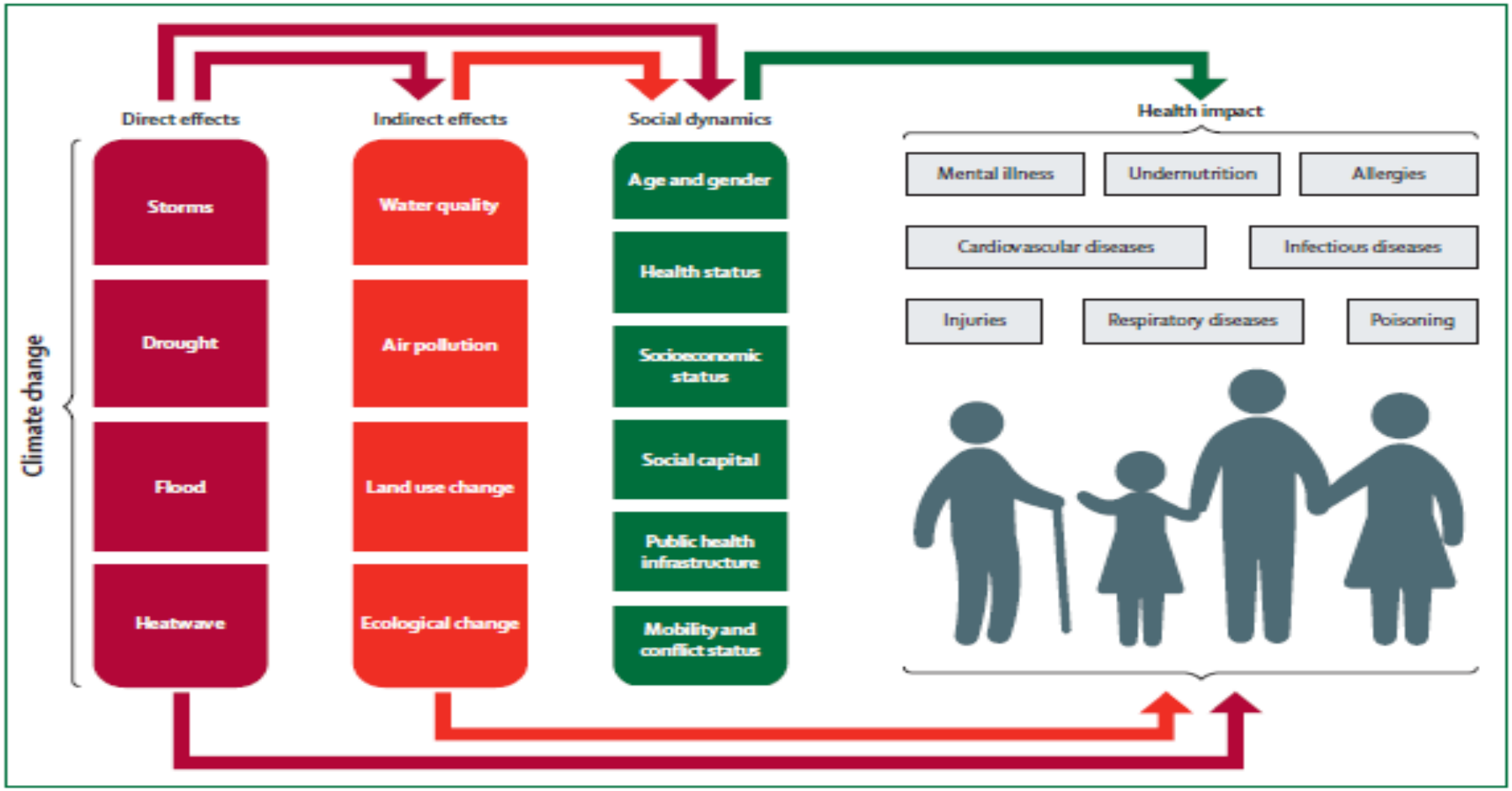


Figure 2: **The direct and indirect effects of climate change on health and wellbeing**
There are complex interactions between both causes and effects. Ecological processes, such as impacts on biodiversity and changes in disease vectors, and social dynamics, can amplify these risks. Social responses also ameliorate some risks through adaptive actions.

... QUE ABRANGE TODOS OS PAÍSES!!!

Figure 18: Perceptions of the threat of climate change, 2013[164]

Watts N, Adger WN, Agnalucci P, rt al. Health and climate: Policy responses to project public health. Lancet 2015; 386: 1861-1914

IV)- O VIH/SIDA: OS DESAFIOS DA NOVA ESTRATÉGIA 90/90/90% DA ONUSIDA

A REALIDADE NACIONAL

FIGURA 3 ANOS POTENCIAIS DE VIDA PERDIDOS POR CAUSAS DE MORTE SELECIONADAS, EM PORTUGAL (2013)

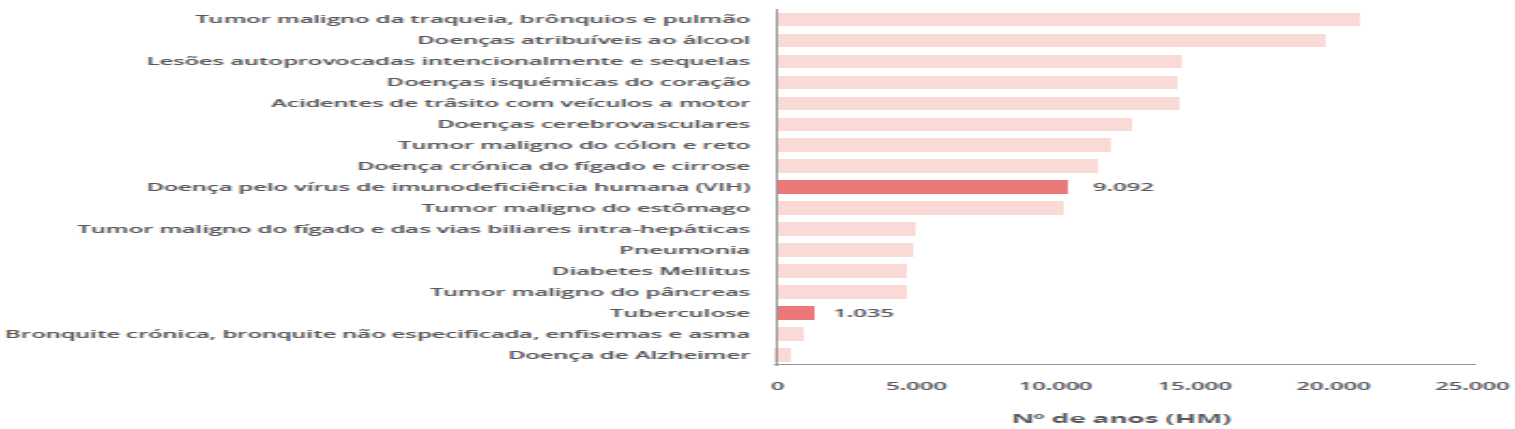
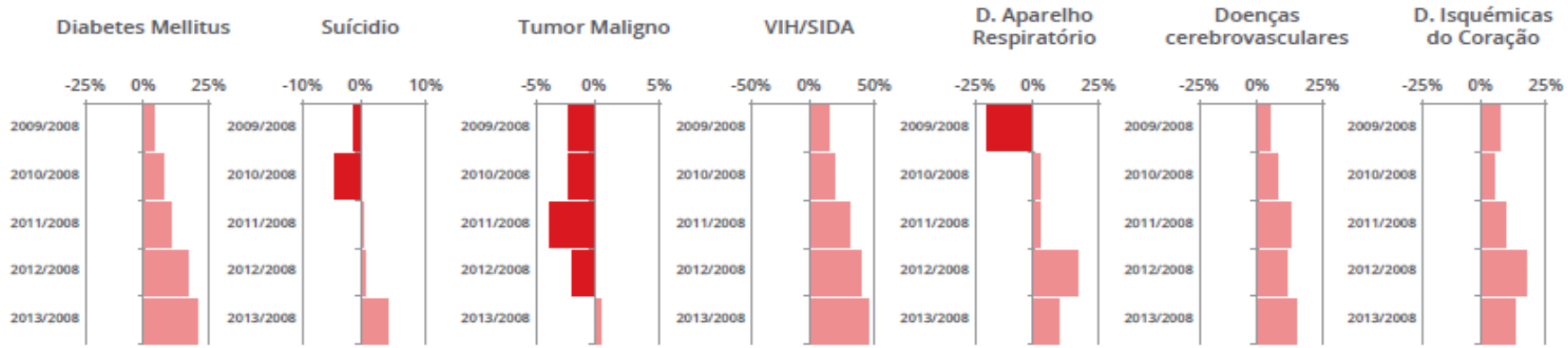


FIGURA 4 ANOS DE VIDA GANHOS, EM PORTUGAL, NO PERÍODO 2008-2013



O CASO PORTUGUÊS INSERIDO NO CONTEXTO EUROPEU

Map 1: New HIV diagnoses per 100 000 population, 2014

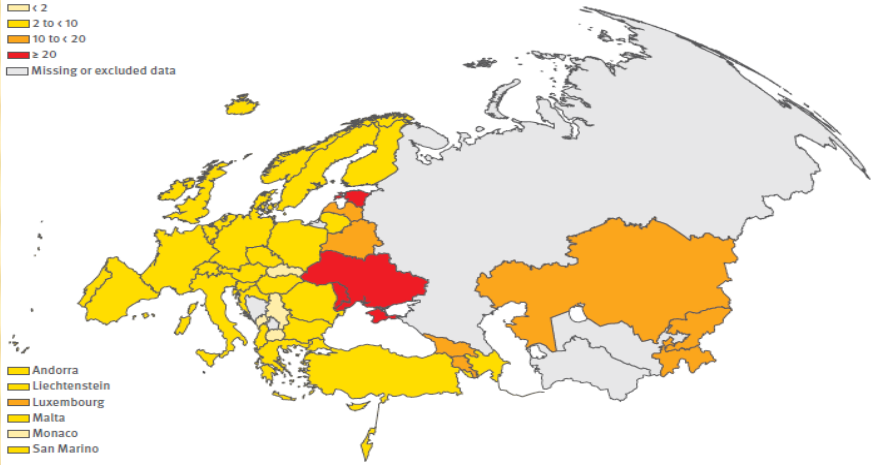
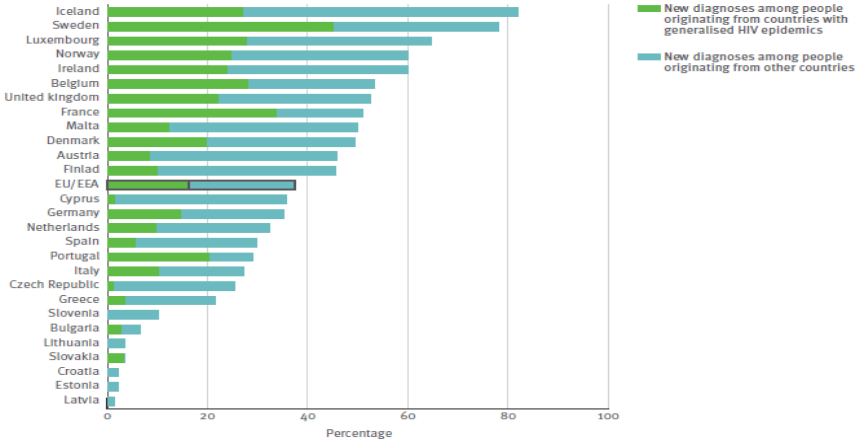
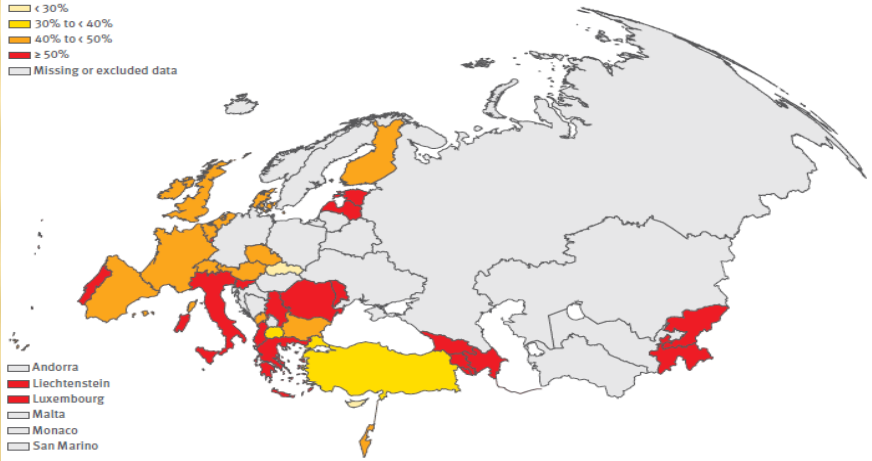


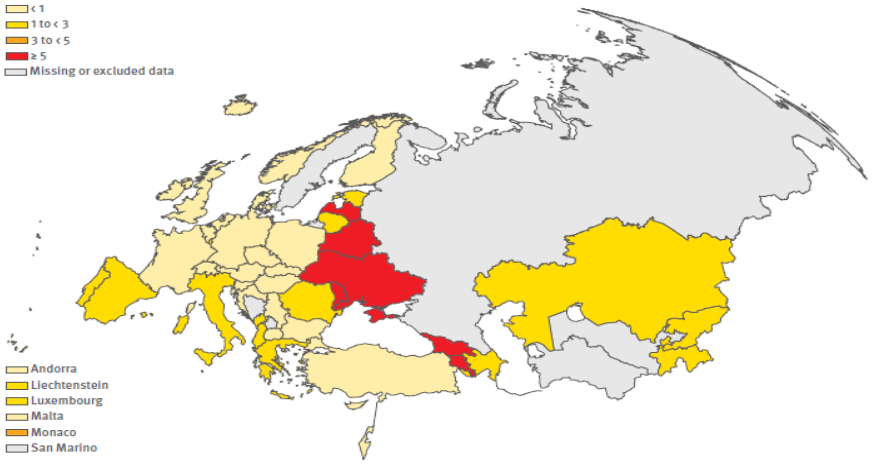
Figure 1.6: Percentage of new HIV diagnoses among migrants out of all reported cases with known information on region of origin, by country of report, EU/EEA, 2014 (n=25 525)



Map 7: Percentage of adult (>14 years) HIV diagnoses with CD4 <350 cells/mm³ at diagnosis, 2014



Map 8: AIDS diagnoses reported per 100 000 population, 2014



OS ENORMES IMPACTOS DA TARVC SOBRE A MORTALIDADE E A TRANSMISSÃO VERTICAL ...

BOSTON HEALTHCARE

White Paper | December 2012

Recognizing the Value of Innovation in HIV/AIDS Therapy

FIGURE 1. Evolution of the Treatment of HIV Infection: 1980s to Present

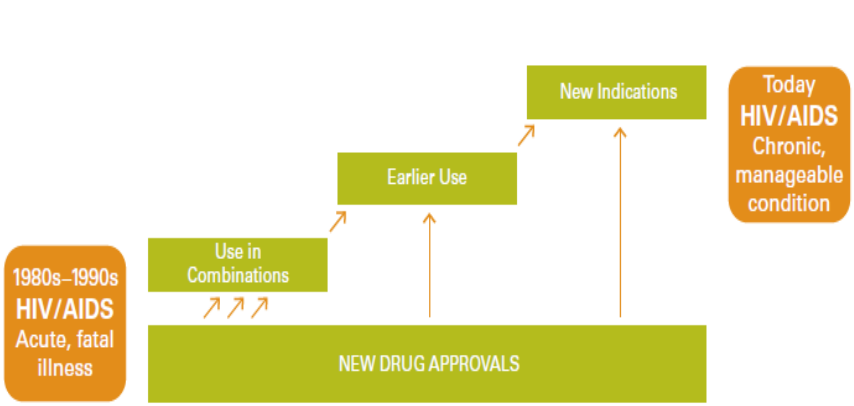


FIGURE 2. HIV Death Rates and HAART Treatment Advances (U.S., 1990-2010)

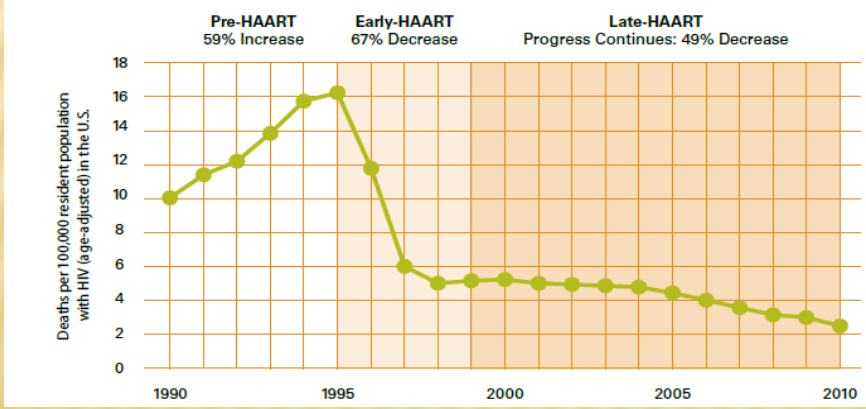
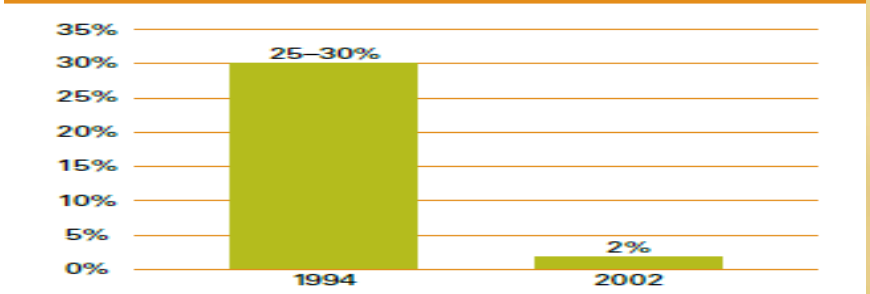


FIGURE 3. Reductions in Mother-to-Child HIV Transmission



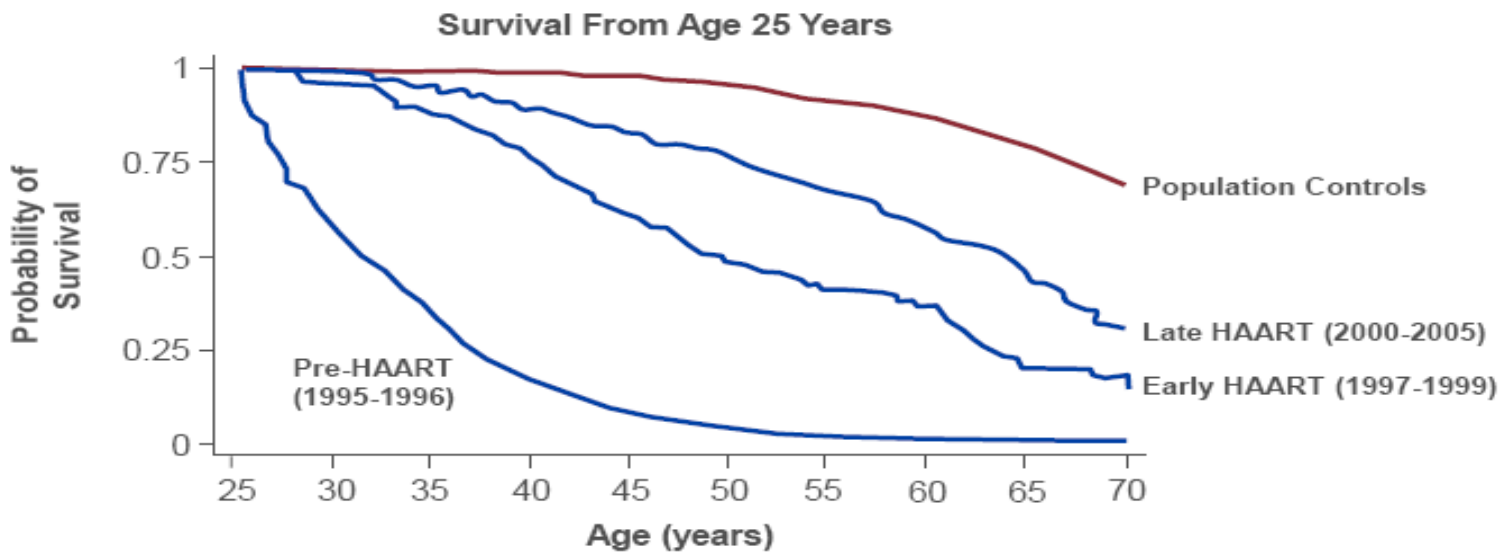
Source: Centers for Disease Control and Prevention, "Achievements in Public Health: Reduction in Perinatal Transmission of HIV Infection — United States, 1985-2005," MMWR, 55 (2 June 2006) 21, 592-597 http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5521a3.htm.

… E SOBRE A SOBREVIDA DOS DOENTES

Survival trends in HIV infection have changed since the adoption of cART

UP TO THE CHALLENGE
OF LONG-TERM TREATMENT SUCCESS

Cumulative survival curve for HIV-infected persons (non-HCV co-infected) and persons from the general population.



n=383,862 (HIV-infected patients, n=3,990; General population controls, n=379,872)

Adapted from Lohse N, et al. Ann Int Med. 2007;146:87-95.

A SUA DEMONSTRADA CUSTO-EFETIVIDADE ...

International AIDS Society–USA Topics in HIV Medicine

Perspective

Cost-Effectiveness of HIV Interventions: From Cohort Studies and Clinical Trials to Policy

Table **1.** Per-Person Survival Benefit in AIDS Patients by Treatment Era

Years	Intervention	Per-Person Survival Benefit (months)	No. of Patients Diagnosed and Entering Care	Total Survival Benefit (years)
1989-1992	PCP prophylaxis	3.1	158,370	40,912
1993-1995	PCP prophylaxis + MAC prophylaxis	24.4	226,458	460,465
1996-1997	PCP prophylaxis + MAC prophylaxis + ART Era 1	93.7	72,716	567,788
1998-1999	PCP prophylaxis + MAC prophylaxis + ART Era 2	132.6	52,702	582,359
2000-2002	PCP prophylaxis + MAC prophylaxis + ART Era 3	138.8	71,946	832,179
2003	PCP prophylaxis + MAC prophylaxis + ART Era 4	159.9	24,780	330,189
Total				2,813,892

ART indicates antiretroviral therapy; Eras 1-4, periods characterized by improvements in antiretroviral therapy over time; MAC, *Mycobacterium avium* complex; PCP, *Pneumocystis jiroveci* pneumonia. Adapted from Walensky et al, *J Infect Dis*, 2006.

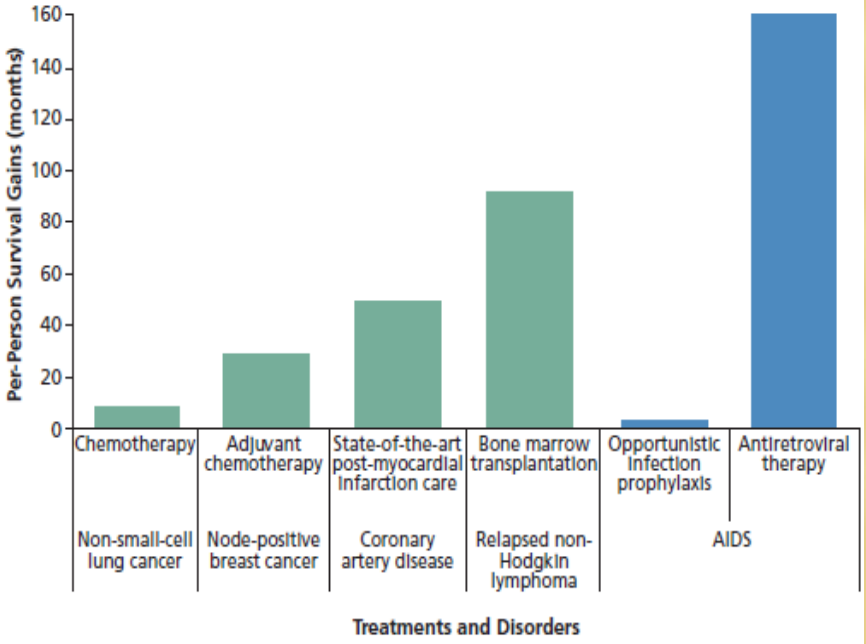


Figure **1.** Per-person survival gains with treatment in patients with AIDS compared with gains associated with interventions for other common diseases in the United States. Adapted from Walensky et al, *J Infect Dis*, 2006.

… BEM COMO QUANTO AO DIAGNÓSTICO PRECOCE …

Table 2. Cost-Effectiveness Ratios for Select HIV-Related Interventions and for HIV and Non-HIV-Related Screening Interventions

Intervention	Drug	Cost-Effectiveness Ratio ($/QALY)*	Reference
HIV Interventions			
PCP/toxoplasmosis prophylaxis	TMP-SMX	$2600	Freedberg et al, JAMA, 1998
Antiretroviral therapy	Zidovudine/ lamivudine/ efavirenz	$13,000	Freedberg et al, N Engl J Med, 2001
Genotypic resistance test, at treatment failure	NA	$17,900	Weinstein et al, Ann Intern Med, 2001
Genotypic resistance test, treatment-naive	NA	$20,200	Sax et al, Clin Infect Dis, 2005
Inpatient HIV screening	NA	$15,100	Walensky et al, Am J Med, 2005
MAC prophylaxis	Azithromycin	$44,500	Freedberg et al, JAMA, 1998
HIV and Other Screening Interventions			
HIV screening every 5 years in patients at high risk	NA	$42,200	Paltiel et al, N Engl J Med, 2005
Breast cancer screening: annual mammogram, 50-69 years old	NA	$57,500	Salzmann et al, Ann Intern Med, 1997
Colon cancer screening: FOBT + sigmoidoscopy every 5 years, 50-85 years old	NA	$53,600	Frazier et al, JAMA, 2000
Type 2 diabetes: one-time FPG, > 25 years old	NA	$63,000	CDC, JAMA, 1998

CDC indicates Centers for Disease Control and Prevention; FOBT, fecal occult blood test; FPG, fasting plasma glucose; MAC, *Mycobacterium avium* complex; NA, not applicable; PCP, *Pneumocystis jiroveci* pneumonia; TMP-SMX, trimethoprim-sulfamethoxazole.
*All costs adjusted to 2001 US dollars. Ratios from Walensky et al, *Am J Med*, 2005.

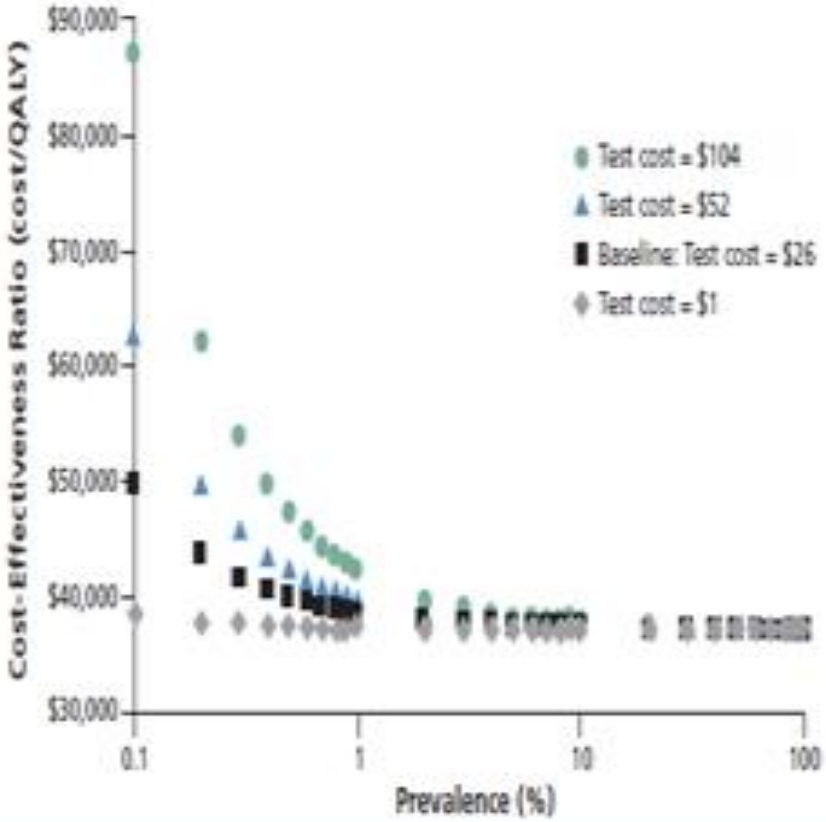
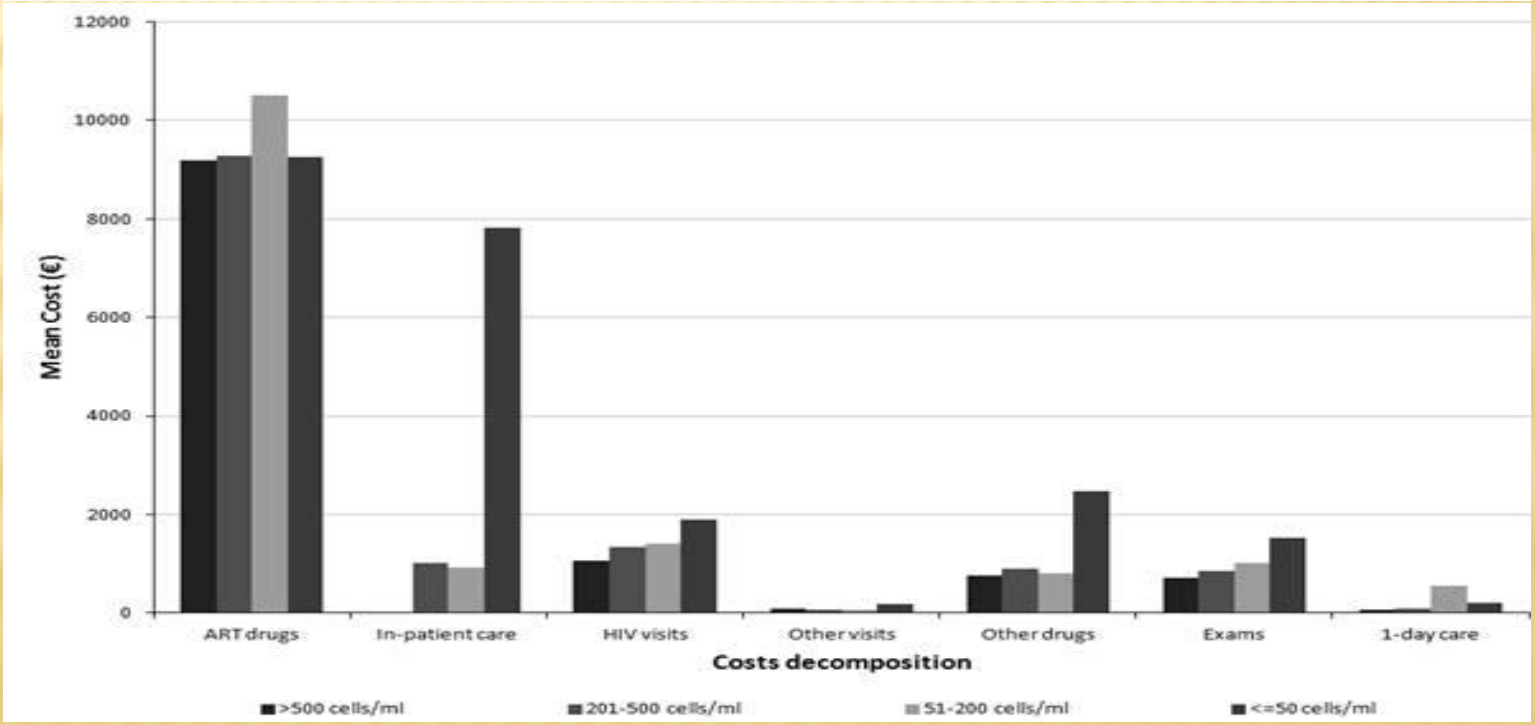


Figure 2. Cost-effectiveness ratios of HIV screening according to prevalence of undiagnosed HIV infection in the testing population and different hypothetical test costs. QALY indicates quality-adjusted life-years. Adapted from Walensky et al, Am J Med, 2005.

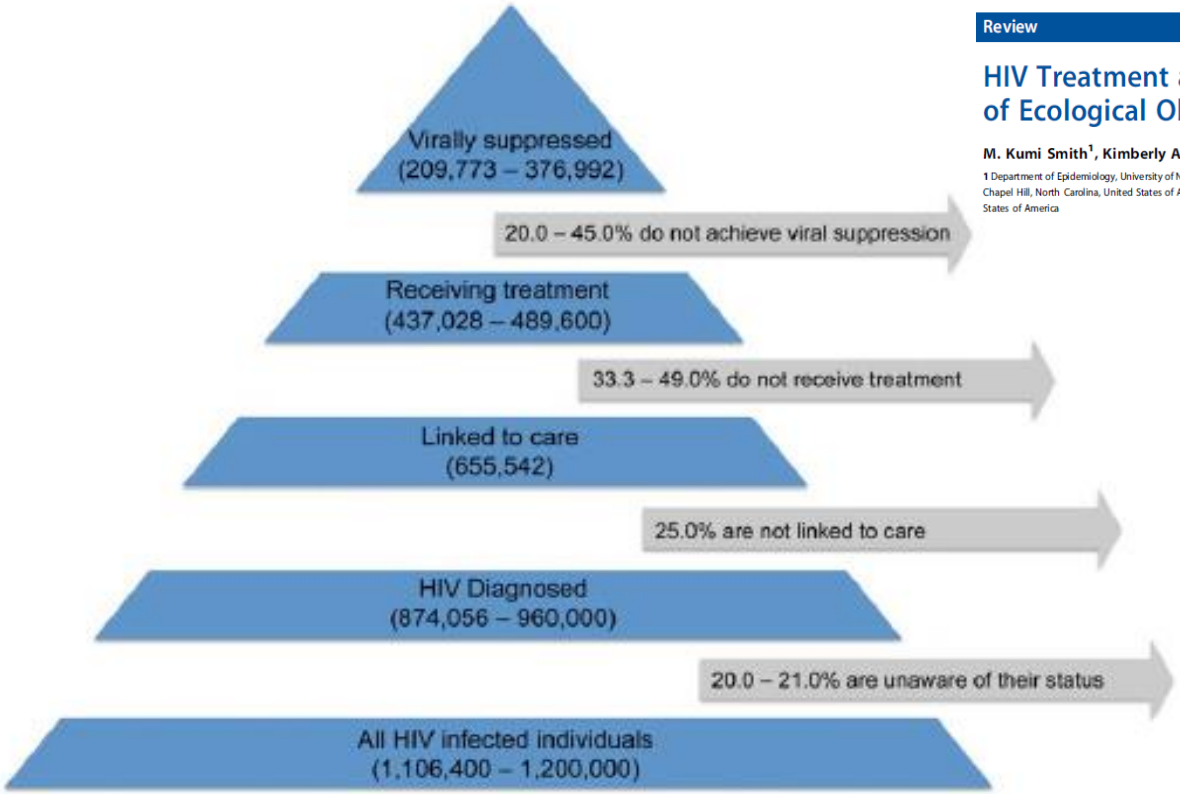
… PREMISSA QUE TAMBÉM JÁ FOI DEMONSTRADA EM PORTUGAL!!!

DIRECT TREATMENT COSTS OF HIV/AIDS IN PORTUGAL

Julian Perelman[1,2], Joana Alves[1], Ana Cláudia Miranda[3], Céu Mateus[1,2], Kamal Mansinho[2,3], Francisco Antunes[4], Joaquim Oliveira[5], José Poças[6], Manuela Doroana[4], Rui Marques[7], Eugénio Teófilo[8], João Pereira[1,2]



O CASO DOS EUA ...



OPEN ACCESS Freely available online PLOS MEDICINE

Review

HIV Treatment as Prevention: The Utility and Limitations of Ecological Observation

M. Kumi Smith[1], Kimberly A. Powers[1,2], Kathryn E. Muessig[2], William C. Miller[1,2], Myron S. Cohen[1,2,3]*

1 Department of Epidemiology, University of North Carolina, Chapel Hill, North Carolina, United States of America, 2 Department of Medicine, University of North Carolina, Chapel Hill, North Carolina, United States of America, 3 Department of Microbiology and Immunology, University of North Carolina, Chapel Hill, North Carolina, United States of America

Figure 1. Estimated numbers of HIV-infected individuals in the US retained (and corresponding percentages lost) at various stages of the test, link, and treat cascade. This figure is based on data from [61,62].

doi:10.1371/journal.pmed.1001260.g001

OS ESTUDOS FUNDAMENTAIS E AS NOVAS RECOMENDAÇÕES TERAPÊUTICAS

The NEW ENGLAND JOURNAL of MEDICINE
ESTABLISHED IN 1812 AUGUST 27, 2015 VOL. 373 NO. 9

Initiation of Antiretroviral Therapy in Early Asymptomatic HIV Infection

The INSIGHT START Study Group*

The NEW ENGLAND JOURNAL of MEDICINE
ESTABLISHED IN 1812 NOVEMBER 30, 2006 VOL. 355 NO. 22

CD4+ Count–Guided Interruption of Antiretroviral Treatment

The Strategies for Management of Antiretroviral Therapy (SMART) Study Group*

BILL & MELINDA GATES foundation

WORLD BANK

HIV Modelling Consortium

OPEN ACCESS Freely available online PLoS MEDICINE

Review

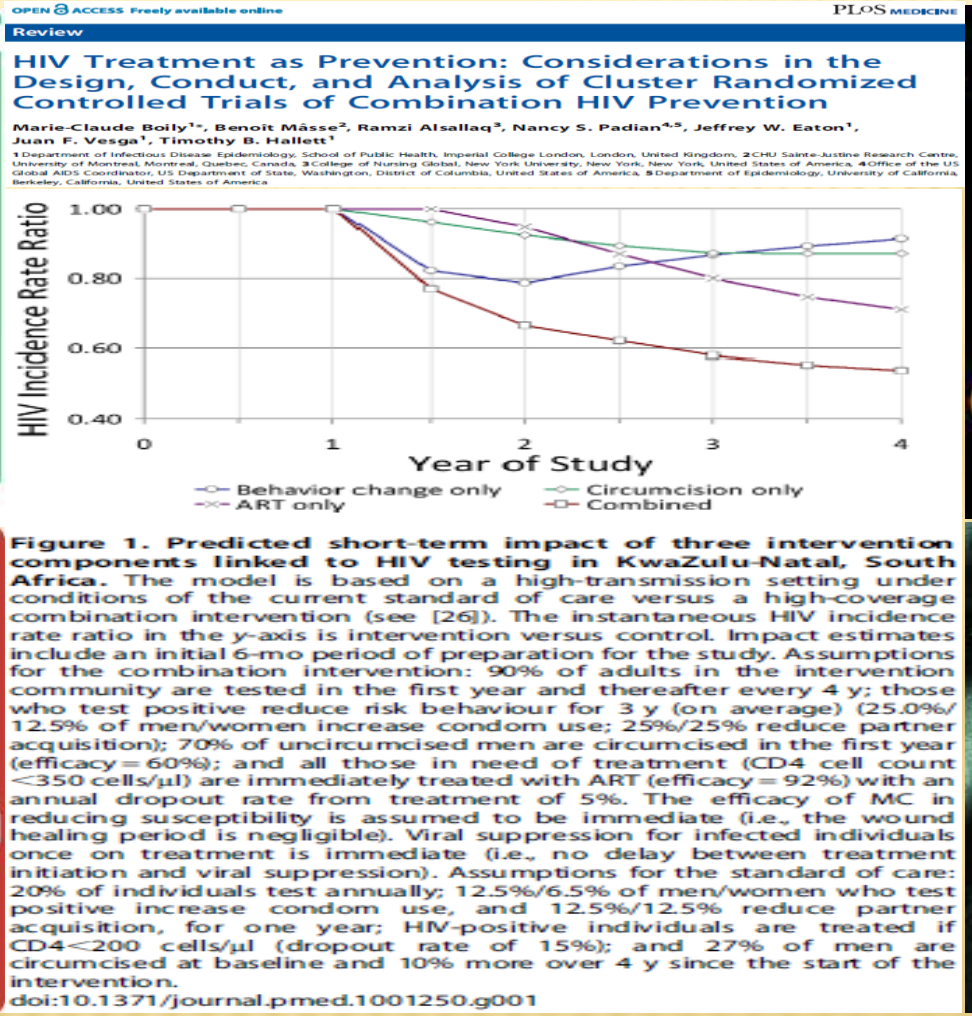
HIV Treatment as Prevention: Models, Data, and Questions—Towards Evidence-Based Decision-Making

The HIV Modelling Consortium Treatment as Prevention Editorial Writing Group*

Health benefits, costs, and cost-effectiveness of earlier eligibility for adult antiretroviral therapy and expanded treatment coverage: a combined analysis of 12 mathematical models

Jeffrey W Eaton*, Nicolas A Menzies*, John Stover, Valentina Cambiano, Leonid Chindelevitch, Anne Cori, Jan A C Hontelez, Salal Humair, Cliff C Kerr, Daniel J Klein, Sharmistha Mishra, Kate M Mitchell, Brooke E Nichols, Peter Vickerman, Roel Bakker, Till Bärnighausen, Anna Bershteyn, David E Bloom, Marie-Claude Boily, Stewart T Chang, Ted Cohen, Peter J Dodd, Christophe Fraser, Chaitra Gopalappa, Jens Lundgren, Natasha K Martin, Evelinn Mikkelsen, Elisa Mountain, Quang D Pham, Michael Pickles, Andrew Phillips, Lucy Platt, Carel Pretorius, Holly J Prudden, Joshua A Salomon, David A M C van de Vijver, Sake J de Vlas, Bradley G Wagner, Richard G White, David P Wilson, Lei Zhang, John Blandford, Gesine Meyer-Rath, Michelle Remme, Paul Revill, Nalinee Sangrujee, Fern Terris-Prestholt, Meg Doherty, Nathan Shaffer, Philippa J Easterbrook, Gottfried Hirnschall, Timothy B Hallett

A IMPORTÂNCIA DA IMPLEMENTAÇÃO DE UMA ESTRATÉGIA COMBINADA



OPEN ACCESS Freely available online PLOS MEDICINE

Review

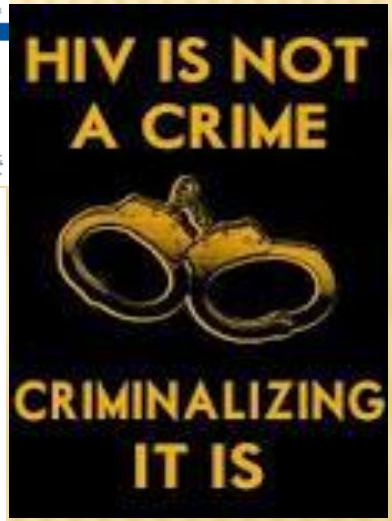
HIV Treatment as Prevention: Considerations in the Design, Conduct, and Analysis of Cluster Randomized Controlled Trials of Combination HIV Prevention

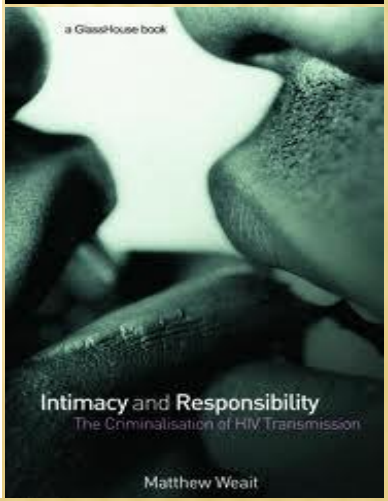
Marie-Claude Boily[1*], Benoit Mâsse[2], Ramzi Alsallaq[3], Nancy S. Padian[4,5], Jeffrey W. Eaton[1], Juan F. Vesga[1], Timothy B. Hallett[1]

1 Department of Infectious Disease Epidemiology, School of Public Health, Imperial College London, London, United Kingdom, 2 CHU Sainte-Justine Research Centre, University of Montreal, Montreal, Quebec, Canada, 3 College of Nursing Global, New York University, New York, New York, United States of America, 4 Office of the US Global AIDS Coordinator, US Department of State, Washington, District of Columbia, United States of America, 5 Department of Epidemiology, University of California, Berkeley, California, United States of America

Figure 1. Predicted short-term impact of three intervention components linked to HIV testing in KwaZulu-Natal, South Africa. The model is based on a high-transmission setting under conditions of the current standard of care versus a high-coverage combination intervention (see [26]). The instantaneous HIV incidence rate ratio in the *y*-axis is intervention versus control. Impact estimates include an initial 6-mo period of preparation for the study. Assumptions for the combination intervention: 90% of adults in the intervention community are tested in the first year and thereafter every 4 y; those who test positive reduce risk behaviour for 3 y (on average) (25.0%/12.5% of men/women increase condom use; 25%/25% reduce partner acquisition); 70% of uncircumcised men are circumcised in the first year (efficacy = 60%); and all those in need of treatment (CD4 cell count <350 cells/μl) are immediately treated with ART (efficacy = 92%) with an annual dropout rate from treatment of 5%. The efficacy of MC in reducing susceptibility is assumed to be immediate (i.e., the wound healing period is negligible). Viral suppression for infected individuals once on treatment is immediate (i.e., no delay between treatment initiation and viral suppression). Assumptions for the standard of care: 20% of individuals test annually; 12.5%/6.5% of men/women who test positive increase condom use, and 12.5%/12.5% reduce partner acquisition, for one year; HIV-positive individuals are treated if CD4<200 cells/μl (dropout rate of 15%); and 27% of men are circumcised at baseline and 10% more over 4 y since the start of the intervention.

doi:10.1371/journal.pmed.1001250.g001





FOI PENA QUE...

CMUP
Centro de Matemática
Universidade do Porto

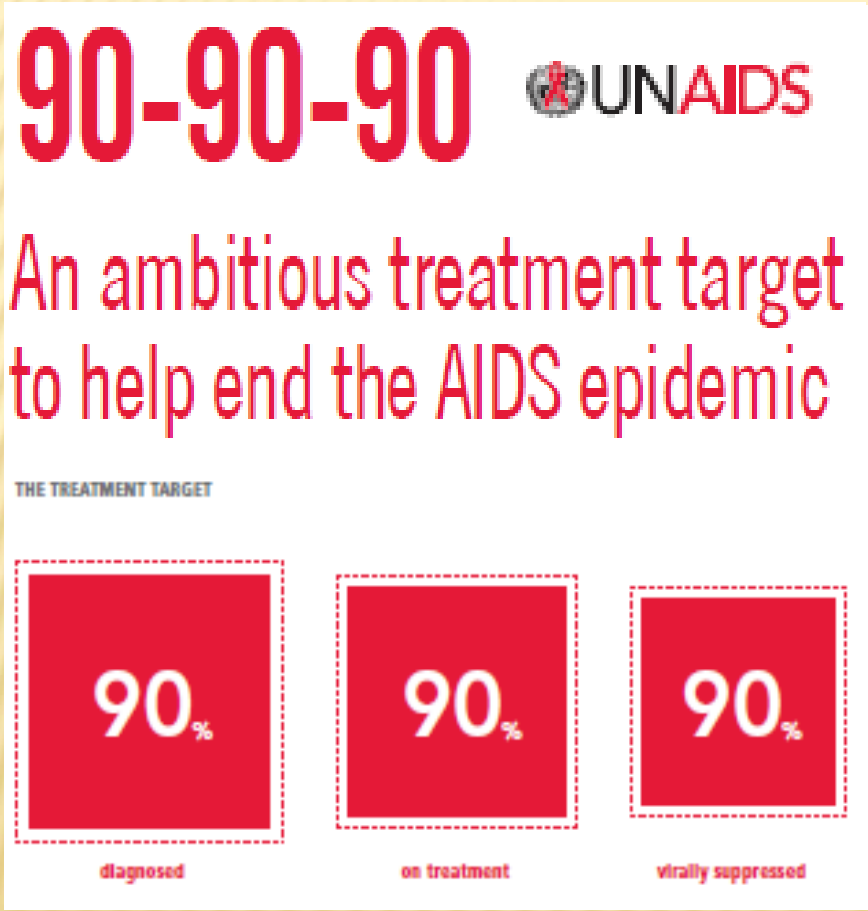
Ist Porto Meeting in Matematics and Biology

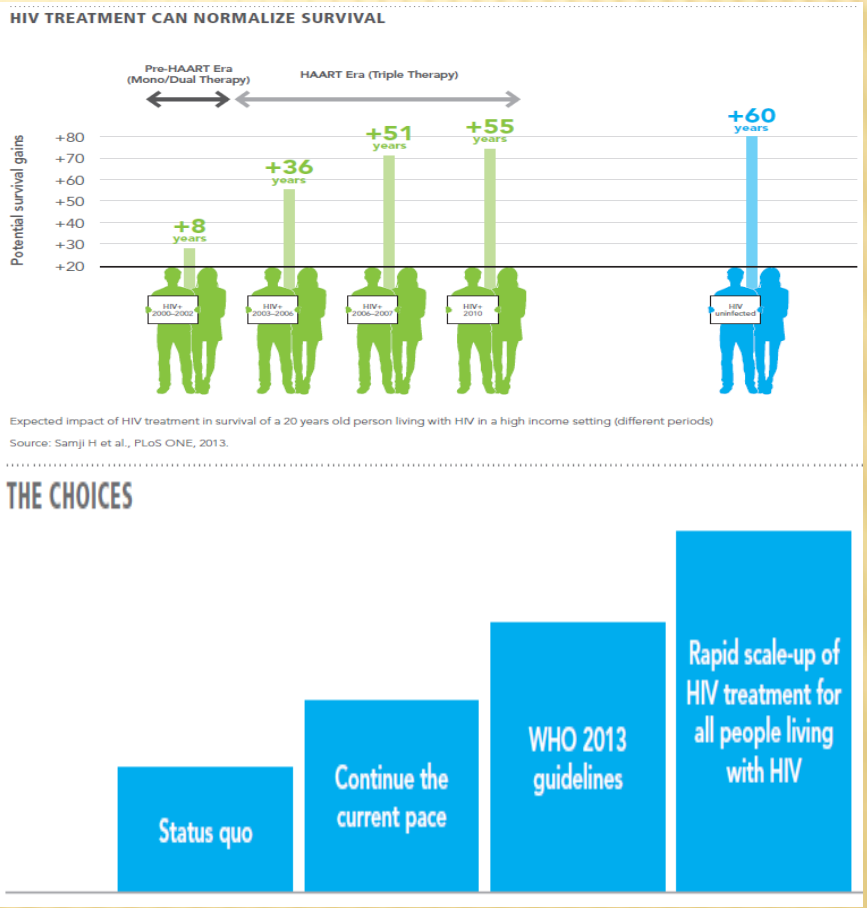
Project on Epidemiological and Economical Aspects of HIV/AIDS transmission in Portugal

- Estudo onde se pretendia analisar:
  - 1)- CV comunitária
  - 2)- CV cumulativa individual

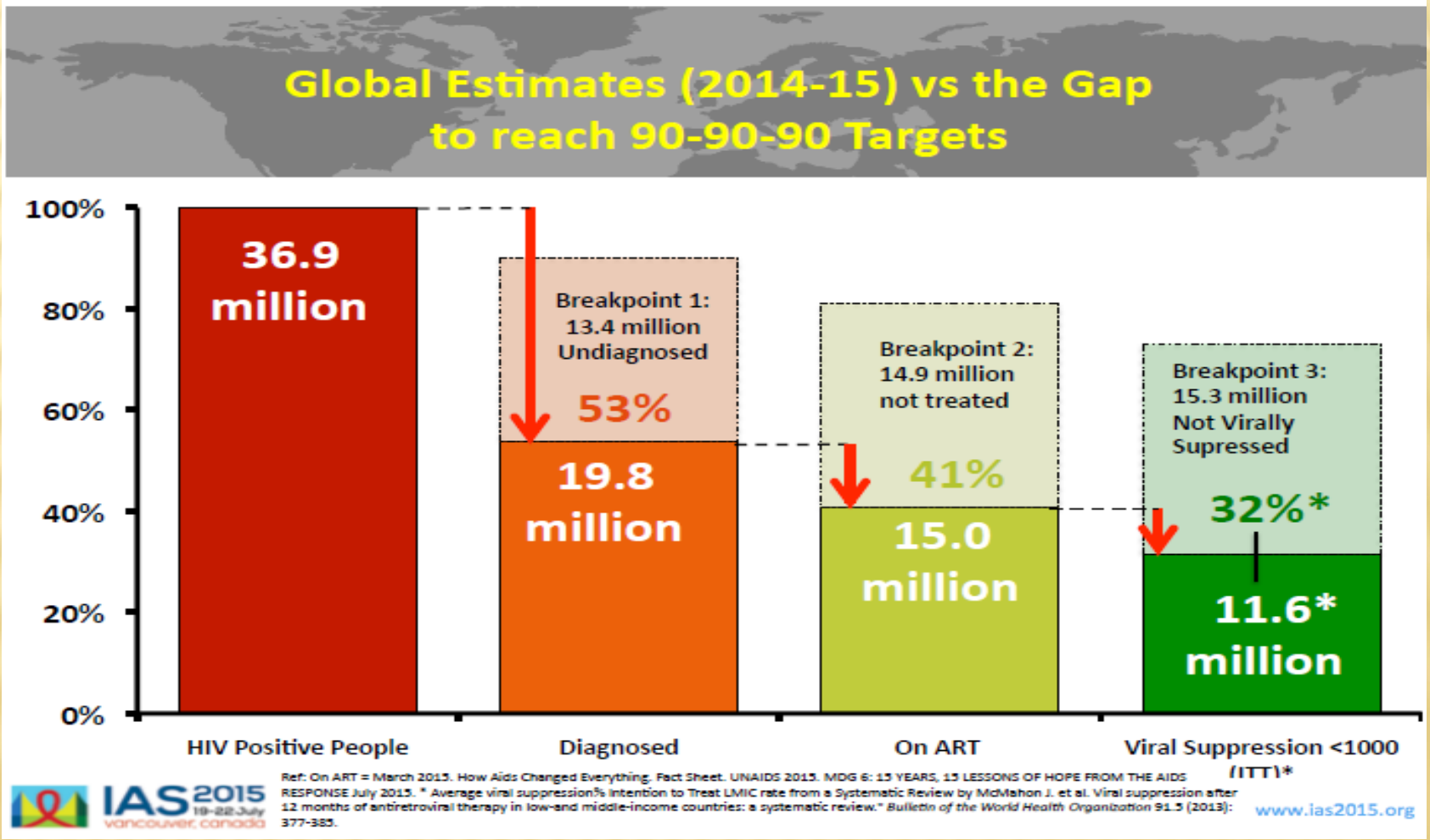
U.PORTO
FC FACULDADE DE CIÊNCIAS UNIVERSIDADE DO PORTO

A ESTRATÉGIA 90%-90%-90% DA UNAIDS

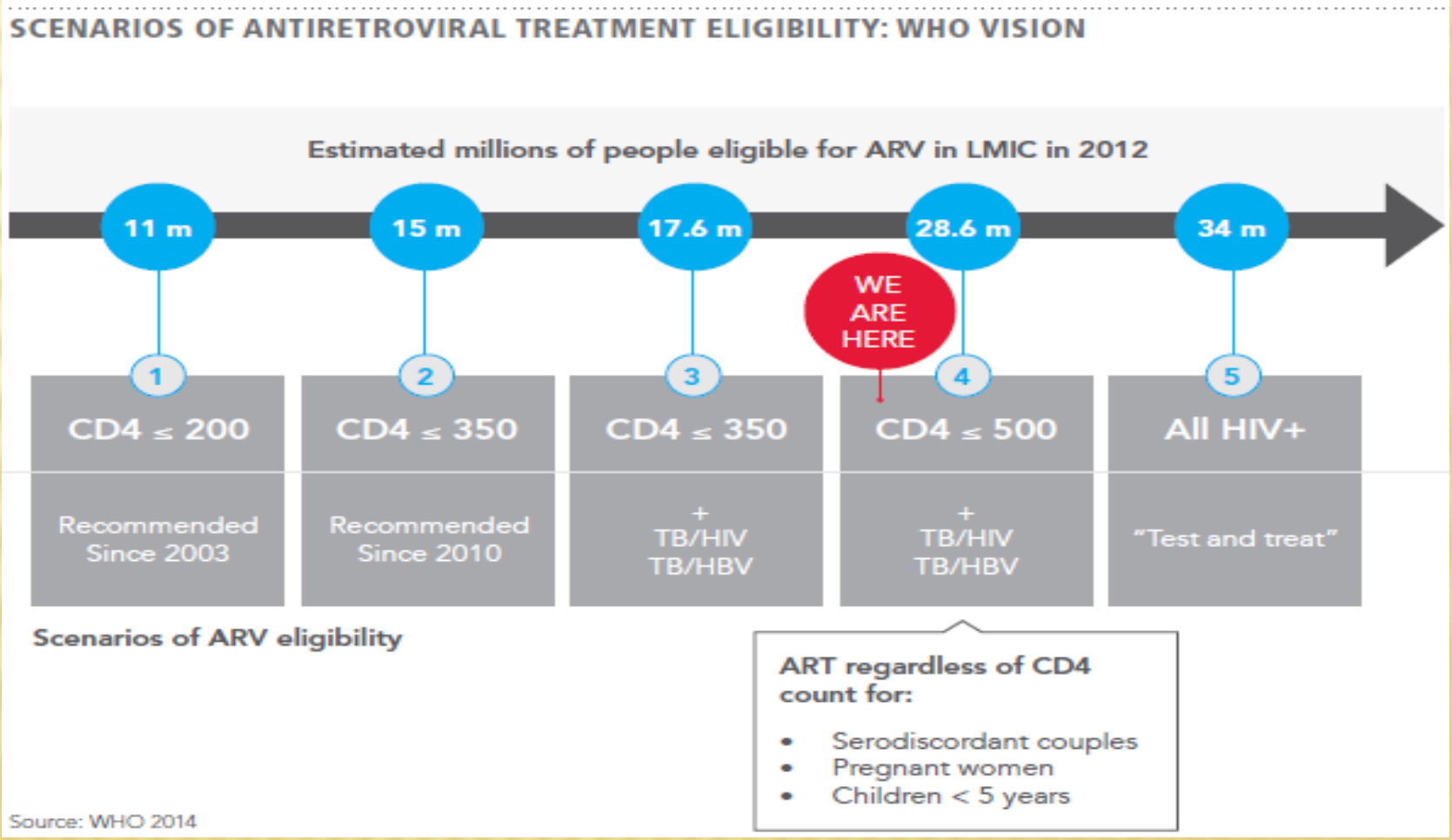




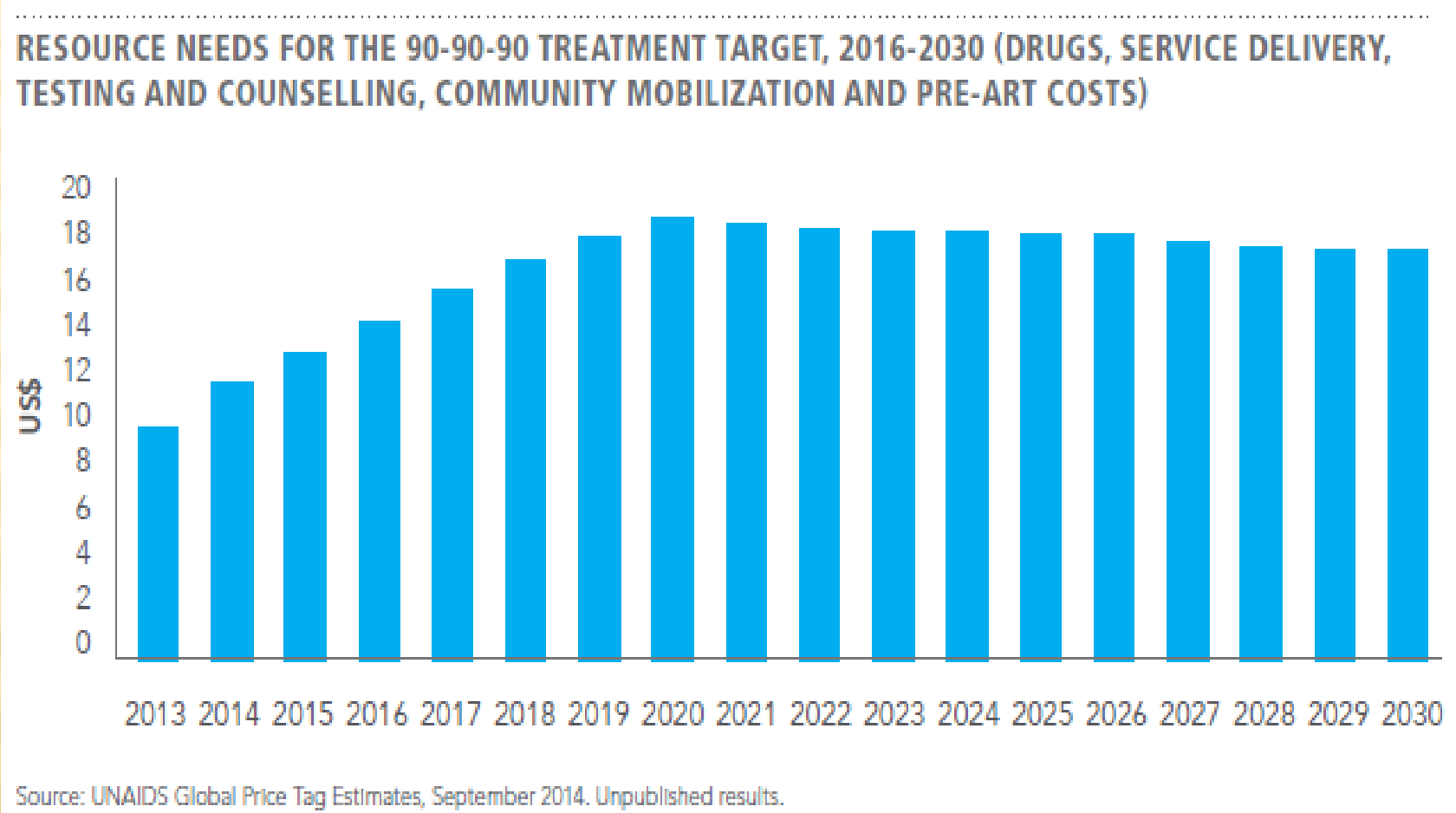
AS DIFERENÇAS ENTRE AS INTENÇÕES E A REALIDADE



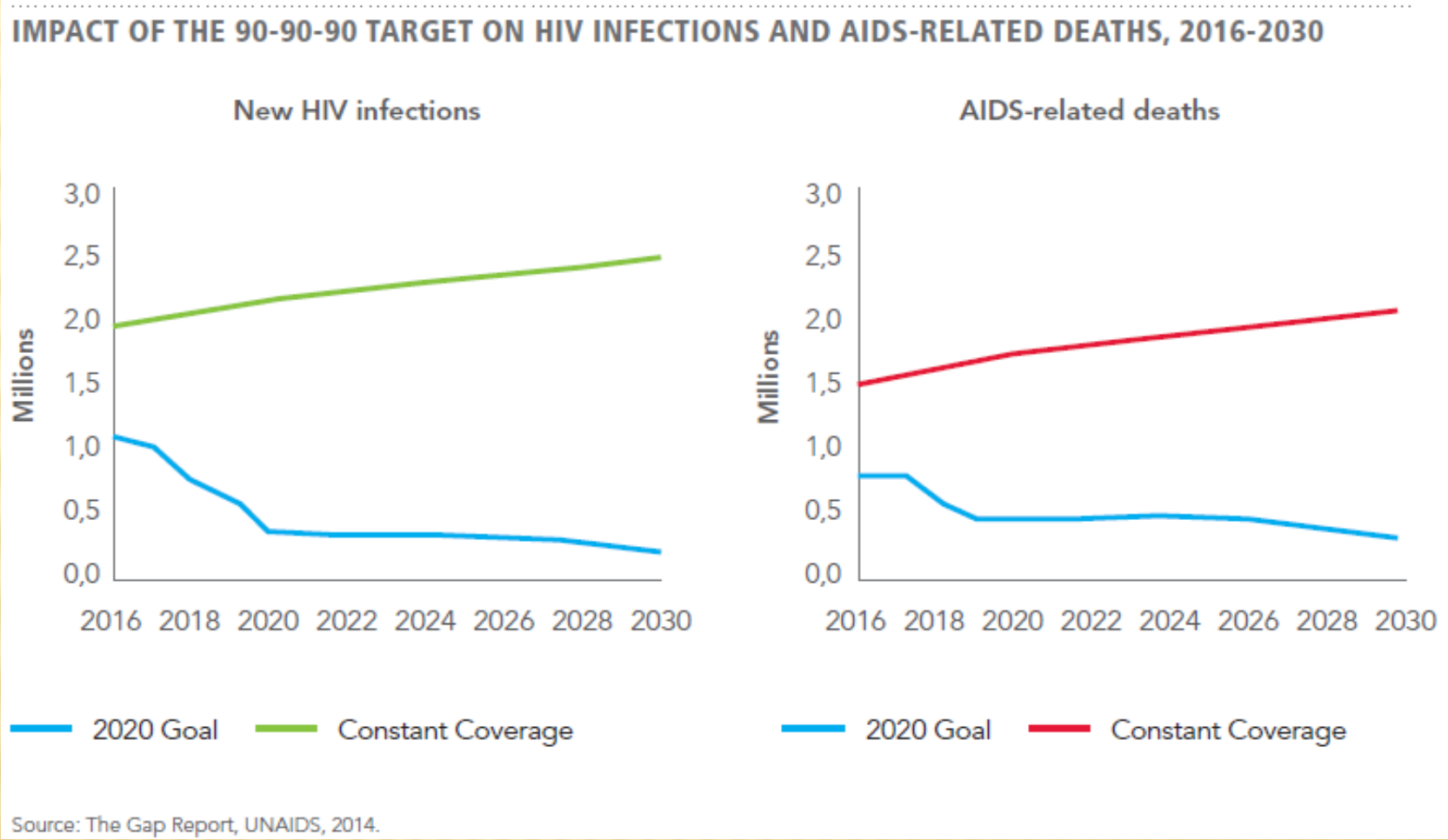
A MAGNITUDE EFETIVA DESTA ESTRATÉGIA



SENDO CERTO QUE OS CUSTOS DIRETOS SERÃO ENORMES, OS DA NÃO IMPLEMENTAÇÃO DESTA ESTRATÉGIA SERÃO, CONTUDO, A PRAZO, MUITO SUPERIORES



OS OBJETIVOS E OS IMPACTOS



A HOMENAGEM DEVIDA: "*O SEU A SEU DONO*"!!!

NIH Public Access
Author Manuscript
Curr HIV/AIDS Rep. Author manuscript; available in PMC 2015 December 01.

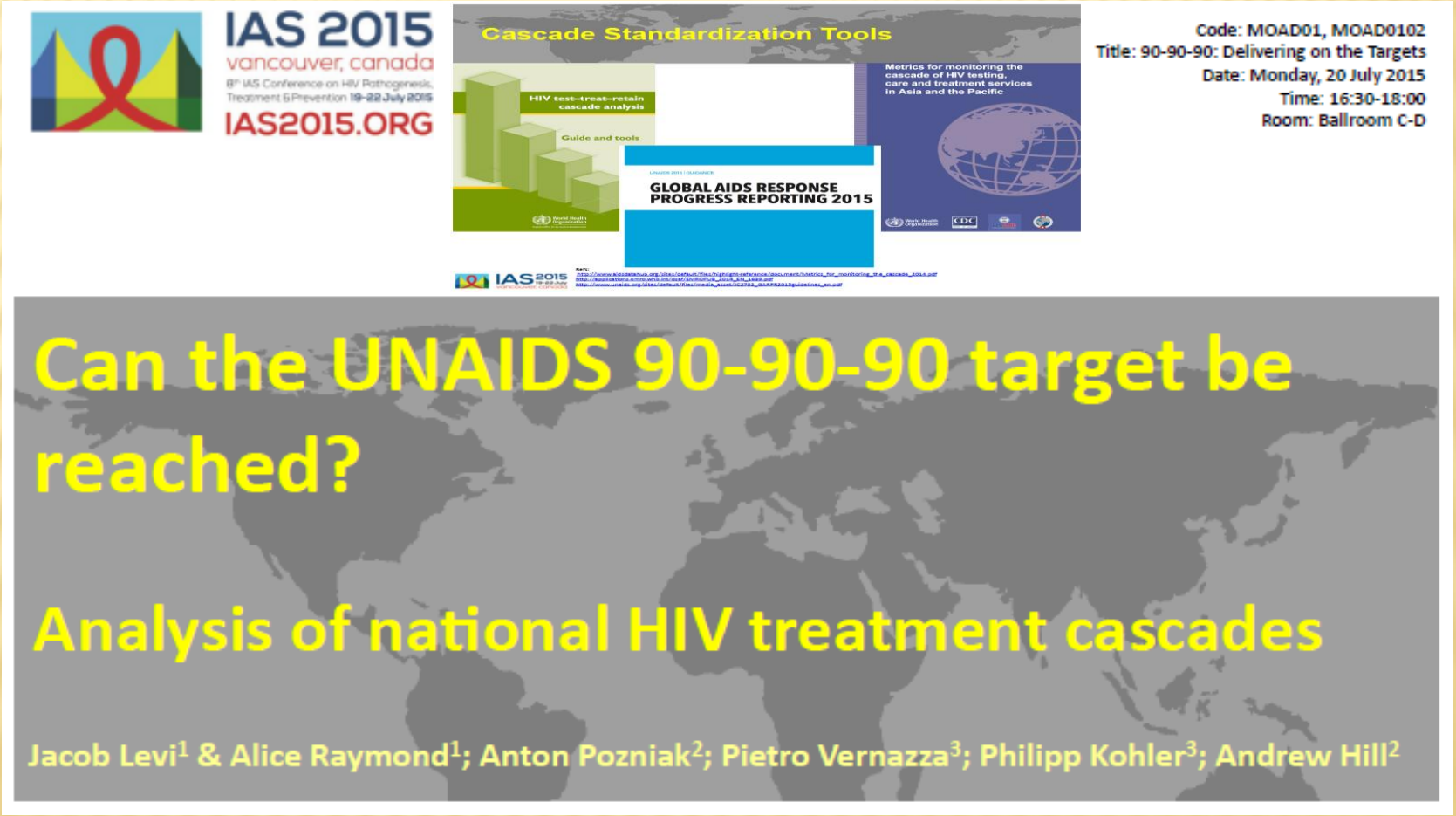
Published in final edited form as:
Curr HIV/AIDS Rep. 2014 December ; 11(4): 496–504. doi:10.1007/s11904-014-0237-5.

Treatment as Prevention–Where Next?

Mark Hull[1,2], **Joep Lange**[3,*], and **Julio S.G. Montaner**[1,2]

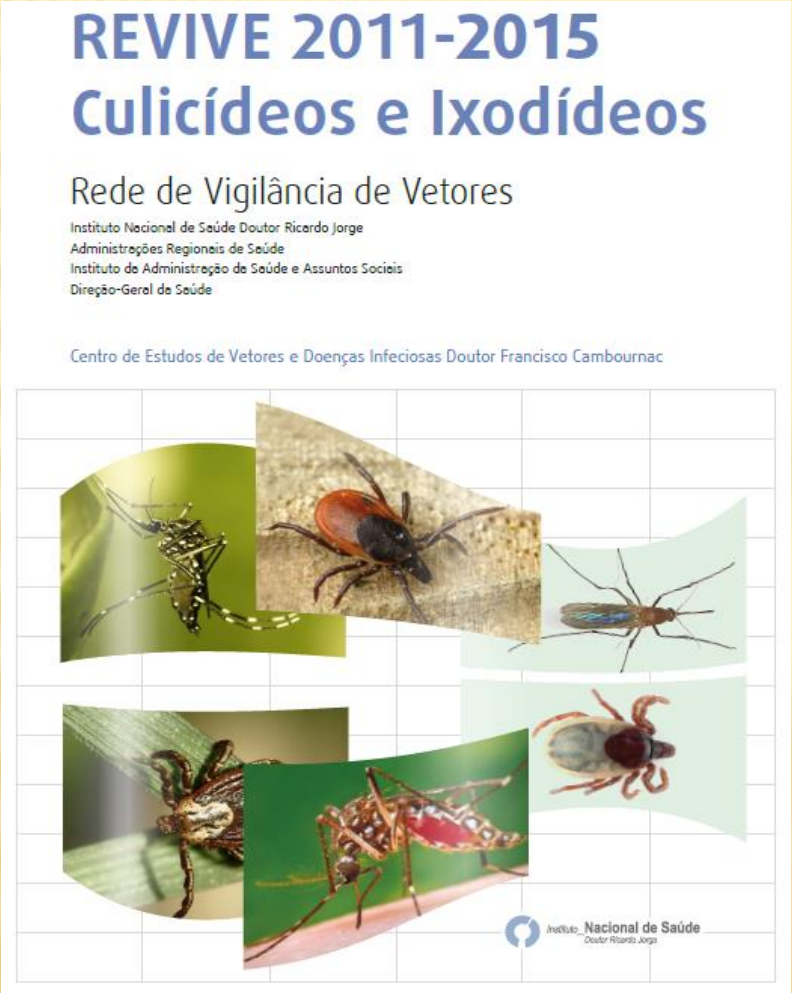
[1]BC Centre for Excellence in HIV/AIDS, Vancouver, Canada [2]University of British Columbia, Vancouver, Canada [3]University of Amsterdam, the Netherlands

IREMOS SER CAPAZES?



V)- A REALIDADE AO NÍVEL DO CHS HSB DE SETÚBAL

A PARTICIPAÇÃO NA REDE DE VIGILÂNCIA DE DOENÇAS TRANSMISSÍVEIS VETORIAIS DO CEVDI DO INSA …



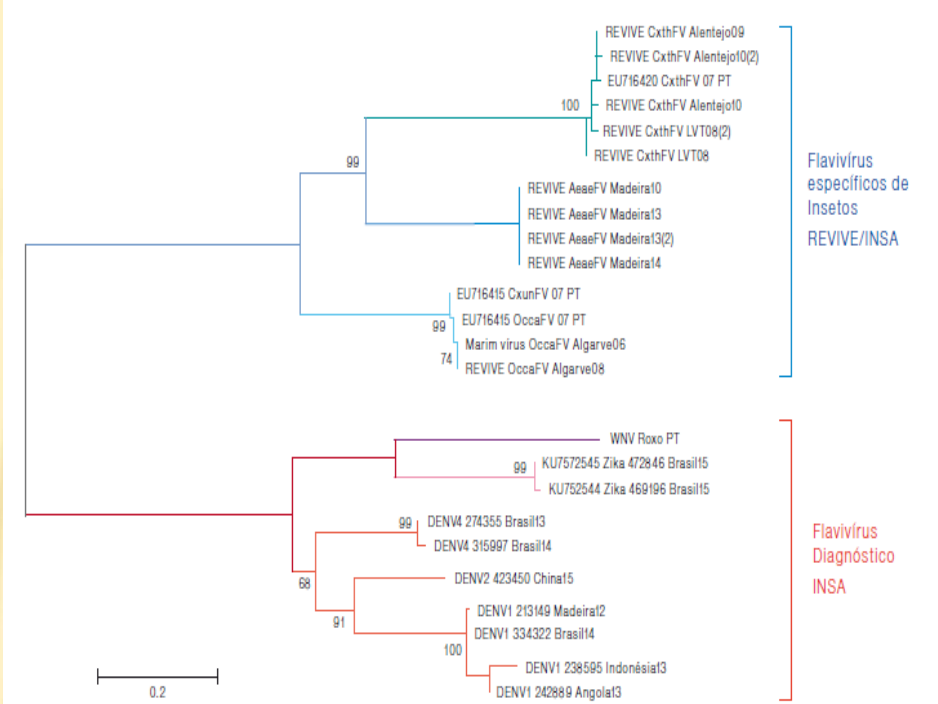


Figura 14: Árvore filogenética máxima parcimónia baseada em sequências parciais da proteína não estrutural NS5 obtida recorrendo ao software *Molecular Evolutionary Genetics Analysis* (MEGA), versão 6. Os valores de bootstrap superiores a 60 são apresentados na árvore. Os flavivírus específicos de insetos estão representados a azuis e os flavivírus patogénicos para o Homem identificados no INSA (no âmbito do diagnóstico laboratorial) estão representados a vermelhos. Todas as sequências apresentam a identificação do vírus, país ou região de origem e ano de deteção: AeeaFV, Flavivírus detetados em *Aedes aegypti*; CxthFV, Flavivírus detetados em *Culex theileri*; CxunFV, Flavivírus detetados em *Culex univitattus*; OccaFV; Flavivírus detetados em *Ochlerotatus caspius*; WNV, vírus *West Nile*; DENV1, vírus Dengue serotipo 1; DENV2, vírus Dengue serotipo 2; DENV4, vírus Dengue serotipo 4.

… PREVENDO A POSSIBILIDADE DA EMERGÊNCIA DE AGENTES INFECIOSOS PARA OS QUAIS FORAM IDENTIFICADOS VETORES COMPETENTES…

Quadro 2 – Agentes etiológicos transmitidos por ixodídeos presentes ou em risco de emergir em Portugal

Agente patogénico	Doença	Espécie de ixodideo
Anaplasma phagocytophilum	Anaplasmose humana	*Ixodes ricinus, I. ventalloi*
Babesia divergens	Babesiose	*Ixodes spp.*
Borrelia burgdorferi s.s.	Borreliose de Lyme	*Ixodes ricinus*
B. garinii		
B. afzelii		
B. valaisiana		
B. lusitaniae		
B. turdi	—	
Coxiella burnetii	Febre Q	Várias espécies
Francisella tularensis	Tularemia	Várias entre as quais *Ixodes ricinus, Dermacentor reticulatus*
Rickettsia aeschlimannii	Sem denominação	*Hyalomma marginatum*
R. conorii	Febre escaro nodular	*Rhipicephalus sanguineus*
R. helvetica	Sem denominação	*Ixodes ricinus*
R. massiliae	Sem denominação	*Rhipicephalus sanguineus*
R. monacensis	Sem denominação	*Ixodes ricinus*
R. sibirica mongolitimonae	LAR*	*Hyalomma* sp., *Rhipicephalus pusillus*
R. slovaca	TIBOLA‡	*Dermacentor marginatus, D. reticulatus*
Vírus da Febre Hemorrágica Crimeia-Congo	Febre hemorrágica	*Hyalomma marginatum, Haemaphysalis punctata, Ixodes ricinus, Dermacentor* spp., *Rhipicephalus* spp.
Vírus Eyach	Sem denominação	*Ixodes ricinus, Ixodes ventalloi*
Vírus TBE	Encefalite	*Ixodes ricinus, Haemaphysalis punctata*

* LAR - *Lymphangitis-associated rickettsiosis*; ‡TIBOLA - *Tick-borne lymphadenopathy*

… COMO ACONTECEU NESTES 2 CASOS!!!

CASO CLÍNICO / *CLINICAL CASE*

Infecção por vírus West Nile (Flavivírus) em Portugal

Considerações acerca de um caso clínico de síndrome febril com exantema

West Nile virus (Flavivirus) infection in Portugal

Considerations about a clinical case with febrile syndrome and rash

/ M. J. Alves[1] / J. M. D. Poças[2] / T. Luz[1] / F. Amaro[1] / L. Zé-Zé[1] / H. Osório[1]

[1] Centro de Estudos de Vectores e Doenças Infecciosas Dr. Francisco Cambournac / Instituto Nacional de Saúde Dr. Ricardo Jorge
[2] Centro Hospitalar de Setúbal, Hospital S. Bernardo EPE

Correspondência:
M. J. Alves
CEVDI/INSA Av. Liberdade, 5
2965-575 Águas de Moura
Telefones: 265 912 222 – 265 938 290
Fax: 265 912 155
e-mail: m.joao.alves@insa.min-saude.pt

/ Resumo

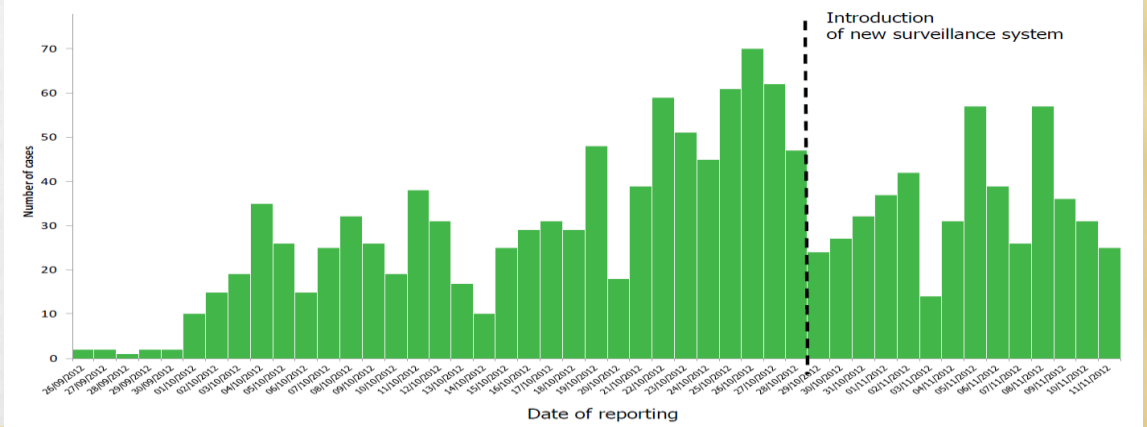
O vírus *West Nile* (WN) é um flavivírus transmitido por mosquitos e agente etiológico de febre e de doença neuroinvasiva. O vírus WN mantém-se na natureza em ciclos enzoóticos que envolvem mosquitos ornitofílicos, como vectores primários, e algumas espécies de aves como reservatório primário.

A sua presença em Portugal é conhecida, surgindo esporadicamente alguns casos de infecção em equinos e humanos. Em 2010 foi identificado um caso humano na região sul de Portugal, tendo sido o único caso humano detectado em toda a época de actividade de mosquitos nesse ano.

Neste caso a paciente apresentava quadro febril com hiperpirexia muito irregular, por vezes com calafrios e picos de febre superiores a 39ºC, cefaleias, mialgias, adinamia e astenia acentuada, adenomegalias volumosas e dolorosas na região cervical, assim como exantema eritematoso difuso com maior expressão no tronco. Os exames laboratoriais identificaram seroconversão de anticorpos IgM contra o vírus *West Nile*.

Palavras-chave: vírus *West Nile*; síndrome febril; zoonoses.

Figure 1. Distribution of probable and confirmed dengue cases, by date of reporting, 26 September–11 November 2012, Madeira (n=1357)



A RESPONSABILIDADE DE ESTARMOS INSERIDOS NO SISTEMA NACIONAL DE VIGILÂNCIA DE VÍRUS RESPIRATÓRIOS

Instituto Nacional de Saúde Doutor Ricardo Jorge
PORTUGAL

Boletim de Vigilância Epidemiológica da Gripe

Época 2015/2016 | Semana 18 | 02 - 08 maio 2016

NOVA SÉRIE

Sumário

1 Vigilância clínica
Taxa de incidência de SG
2 Vigilância laboratorial
Diagnóstico do vírus da gripe e outros vírus respiratórios
Caraterização do vírus da gripe
3 Severidade
Internamentos por gripe em UCI
4 Impacte
Mortalidade por todas as causas
5 Monitorização da temperatura ambiente, taxa de incidência de SG e mortalidade
6 Situação internacional
Nota metodológica

Resumo

Atividade gripal esporádica
Tendência estável

- A taxa de incidência de síndroma gripal (SG) foi de 3,4 por 100.000 habitantes.
- Na semana 18/2016 foram identificados 14 casos de gripe pela Rede Portuguesa de Laboratórios para o Diagnóstico da Gripe. Os vírus da gripe detetados são predominantemente do tipo B.
- Os vírus da gripe circulantes são na sua maioria semelhantes aos vírus contemplados na vacina antigripal da época 2015/2016.
- Não foi admitido nenhum novo caso de gripe nas 20 UCI que reportaram informação.
- Mortalidade observada por todas as causas com valores de acordo com o esperado.
- O valor médio da temperatura mínima do ar, na semana de 2 a 8 de maio de 2016 foi de 8.1°C (valor próximo do normal).
- Na semana 17/2016 a maioria dos países referiu atividade gripal esporádica com tendência decrescente. Predomínio do vírus do tipo B.

ISSN: 2183-7392
Data de publicação: 12/05/2016 Dados disponíveis à data da publicação passíveis de alterações em edições posteriores.
EDITOR: Instituto Nacional de Saúde Doutor Ricardo Jorge I.P. | PERIODICIDADE: semanal | ACESSO: www.insa.pt
COLABORADORES: Direção-Geral da Saúde, Instituto dos Registos e Notariado, Instituto de Gestão Financeira e Equipamentos da Justiça, Instituto Português do Mar e da Atmosfera, Rede Médicos-Sentinela, Serviços de Urgência/Obstetrícia, Rede Nacional de Laboratórios para o Diagnóstico da Gripe, Rede de Hospitais para a Vigilância Clínica e Laboratorial em Unidades de Cuidados Intensivos.

Vigilância laboratorial

Diagnóstico do vírus da gripe e outros vírus respiratórios

HOSPITAIS | REDE PORTUGUESA DE LABORATÓRIOS PARA O DIAGNÓSTICO DA GRIPE

Diagnóstico do vírus da gripe

A Rede Portuguesa de Laboratórios para o Diagnóstico da Gripe conta na época de 2015/2016 com a participação de 16 laboratórios, localizados em hospitais do continente e regiões autónomas da Madeira e dos Açores, assegurando a deteção e caraterização dos vírus da gripe e outros vírus respiratórios que podem estar associados a casos de infeção respiratória grave.
Desde o início da época 2015/2016, os laboratórios da Rede notificaram 6.748 casos de SG, dos quais 1.244 foram positivos para o vírus da gripe [914 vírus A(H1)pdm09, 177 vírus do tipo B, 21 vírus A(H3) e 125 vírus do tipo A não subtipados]. Nas últimas semanas foram detetados maioritariamente vírus da gripe do tipo B.
Foram também identificados outros agentes respiratórios em 1.897 casos de SG sendo o vírus sincicial respiratório (RSV) o detetado com maior frequência. Nas últimas semanas verificou-se uma tendência decrescente no número de vírus respiratórios identificados.

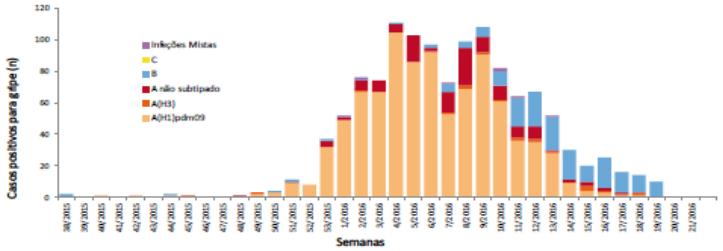


Figura 8 — Distribuição semanal de casos positivos para o vírus da gripe detetados na época 2015/2016.

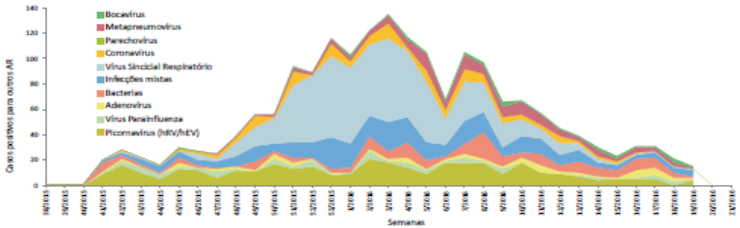


Figura 9 — Distribuição semanal de casos positivos para outros agentes respiratórios (AR) detetados na época 2015/2016.

Boletim de Vigilância Epidemiológica da Gripe | Época 2015/2016 | Semana 19 | 09 - 15 maio 2016 | 6

http://www.insa.pt/sites/INSA/Portugues/Documents/Gripe2.pdf

A EXTREMA IMPORTÂNCIA DE ESTARMOS INTEGRADOS EM PROJETOS EUROPEUS

News

Early influenza vaccine effectiveness results 2015-16: I-MOVE multicentre case-control study

E Kissling [1], M Valenciano [1]
1. EpiConcept, Paris, France

Correspondence: Esther Kissling (e.kissling@epiconcept.fr)

Citation style for this article:
Kissling E, Valenciano M. Early influenza vaccine effectiveness results 2015-16: I-MOVE multicentre case-control study. Euro Surveill. 2016;21(6):pii=30134. DOI: http://dx.doi.org/10.2807/1560-7917.ES.2016.21.6.30134

Article published on 11 February 2016

Instituto Nacional de Saúde Doutor Ricardo Jorge, IP

ESTUDO DA EFETIVIDADE DA VACINA ANTIGRIPAL EM CONTEXTO HOSPITALAR 2015-2016

CENTRO HOSPITALAR DE LISBOA CENTRAL, EPE — Centro Hospitalar de Setúbal, Hospital de São Bernardo, Hospital Ortopédico Sant'Iago do Outão — I-MOVE

O Projeto EVA Hospital 2015-2016

No âmbito do projeto IMOVE+, está a ser implementado o estudo "*Hospital-based test negative case control studies to measure seasonal influenza vaccine effectiveness against influenza laboratory confirmed SARI hospitalisation among the elderly across the European Union and European Economic Area Member States*", cujo objetivo é estimar a efetividade da vacina antigripal na prevenção de casos de gripe severos na população com 65 e mais anos.

Participam neste estudo 11 países (Figura 3), constituindo uma rede de 23 hospitais.

Portugal, participa pela primeira vez nesta rede hospitalar, contando com a colaboração do Centro Hospitalar Lisboa Central (CHLC) e Hospital São Bernardo (Centro Hospitalar de Setúbal), na implementação de um protocolo comum com um desenho do tipo caso-controlo teste negativo, selecionando casos graves de gripe (*Severe Acute Respiratory Infection*—SARI).

Nesta época 2015-2016, a fase de seleção de doentes com SARI iniciou-se na semana 51/2015 em CHLC e na semana 1/2016 em CHS.

MICROOGANISMOS "ALERTA" E "PROBLEMA": A PARTICIPAÇÃO NA REDE DE VIGILÂNCIA DA DGS E DO ECDC

ENTEROCOCCUS
- RESISTENTE À VANCOMICINA (VRE)

NEISSERIA GONORRHOEAE

CLOSTRIDIUM DIFFICILE

ENTEROBACTERIACEAE
– RESISTENTES AOS CARBAPENEMES

PSEUDOMONAS AERUGINOSA

SHIGELLA

STAPHYLOCOCCUS AUREUS
METHICILLIN-RESISTANT (MRSA)

SALMONELLA TYPHI

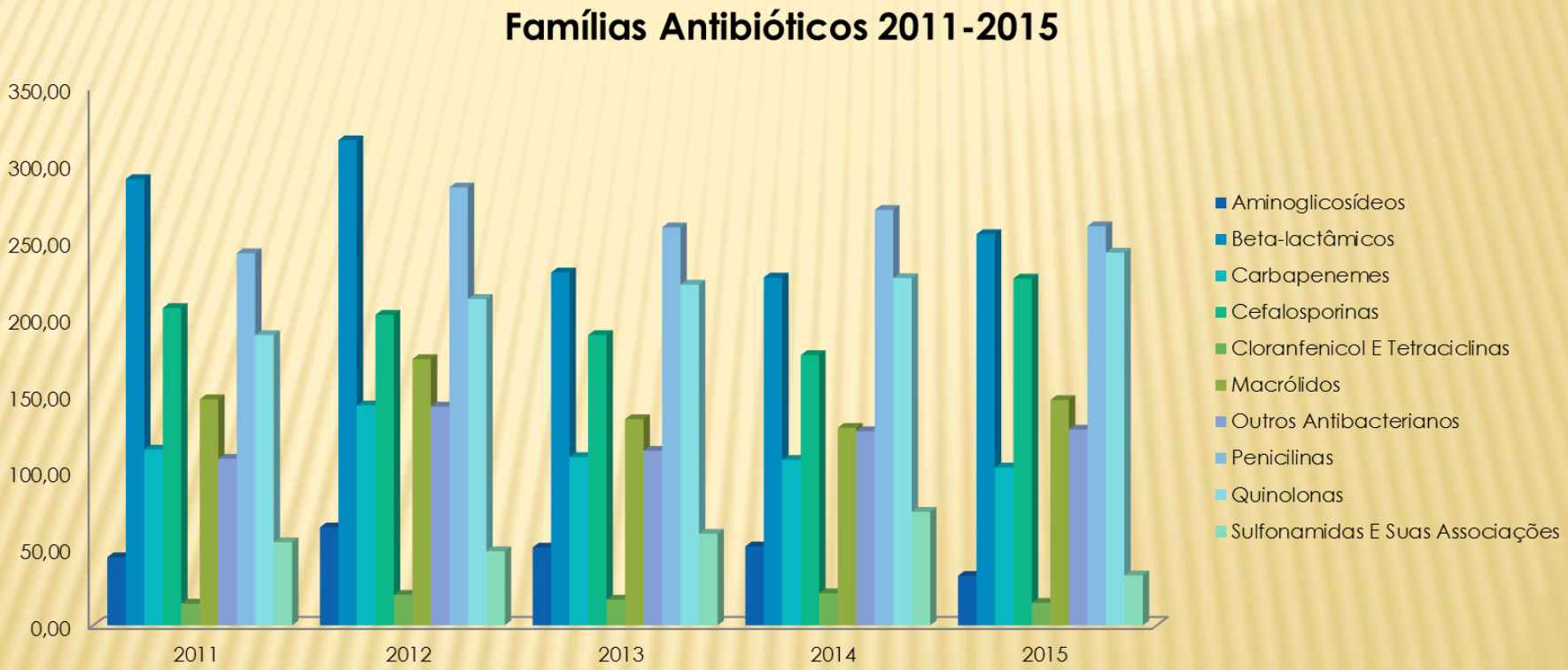
STREPTOCOCCUS PNEUMONIAE

CAMPYLOBACTER

ENTEROBACTERIACEAE
– PRODUTORAS DE β-LACTAMASES

Centro Hospitalar de Setúbal
Hospital de São Bernardo
Hospital Ortopédico Sant'Iago do Outão

ANÁLISE DO CONSUMO DE ANTIBIÓTICOS



Centro Hospitalar de Setúbal
Hospital de São Bernardo
Hospital Ortopédico Sant'Iago do Outão

- Acréscimo de 2% no total de Antibióticos consumidos de 2014 para 2015;
- 4 grandes famílas: **Beta-lactâmicos**, **Cefalosporinas**, **Penicilinas** e **Quinolonas**;

ELABORANDO E DIVULGANDO PERIODICAMENTE A CARTA MICROBIOLÓGICA DO CHS

Centro Hospitalar de Setubal, EPE
Grupo Coordenador Local de Controlo de Infeção e de Prevenção de Resistências aos Antimicrobianos (GCLCIPRA)

Perfil de sensibilidade (%) das principais bactérias isoladas em 2015

		Bactérias Gram -							Bactérias Gram +			
		Escherichia coli	*Klebsiella pneumoniae*	*Proteus mirabilis*	*Pseudomonas aeruginosa*	*Acinetobacter baumannii*	*Acinetobacter baumannii complex*	*Haemophilus influenzae*	*Staphylococcus aureus*	*Enterococcus faecalis*	*Enterococcus faecium*	*Streptococcus pneumoniae*
	Nº amostras	1315	266	178	252	4	25	9	555	197	21	21
ß-lactâmicos	Oxacilina								46			
	Ampicilina	42		62				88		100	24	100
	Amoxicilina/Ác.Clavulânico	81	69	93				100				
	Cefotaxima	89	72	95				100				100
	Ceftazidima	89	70	95	79	75	38					
	Piperacilina/Tazobactam	93	72	99	78	75	41					
	Imipenem; Meropenem	100	98	100	78	75	50	100		100	24	100
Aminoglicosidos	Gentamicina	87	80	88	86	75	54	100	95			
	Gentamicina_HC									72	65	
	Amikacina	95	89	97	88	100	80					
Quinolonas	Ciprofloxacina	72	70	66	69	75	46	100	39	82	6	100
Macrólidos	Eritromicina											74
Glicopéptidos	Vancomicina								100	100	95	100
Sulfamidas	Cotrimoxazol	65	73	65		75	52	100	98			85

- < 50% de estirpes sensíveis
- Entre 50 a 85% de estirpes sensíveis
- >85% de estirpes sensíveis

CARACTERIZAÇÃO DA CASUÍSTICA DE AMBULATÓRIO DO SDI: TOTAL DE DOENTES: 5676 (+ 446) EM JANEIRO 2016

- HIV
  - Total- 2753 (+ 156)
    - Ativos: 1216 (+ 156)
    - ADMITIDOS DE NOVO: 65 (-4)
      - HIV1: 1143 (+ 207)
      - HIV2: 23 (+ 3)
      - Presos: 50 (=)
    - Falecidos Total: 735 (+17)
      - Em 2015: 17
    - Refratários: 667 (+82)
    - Transferidos: 135 (-7)
- Hepatites víricas (Mono-infetados)
  - Total: 992 (+64)
    - Ativos: 521
    - ADMITIDOS DE NOVO: 98
    - Presos: 26
  - Falecidos: 156
    - Em 2015: 1
  - Não ativos: 310
  - Transferidos: 5

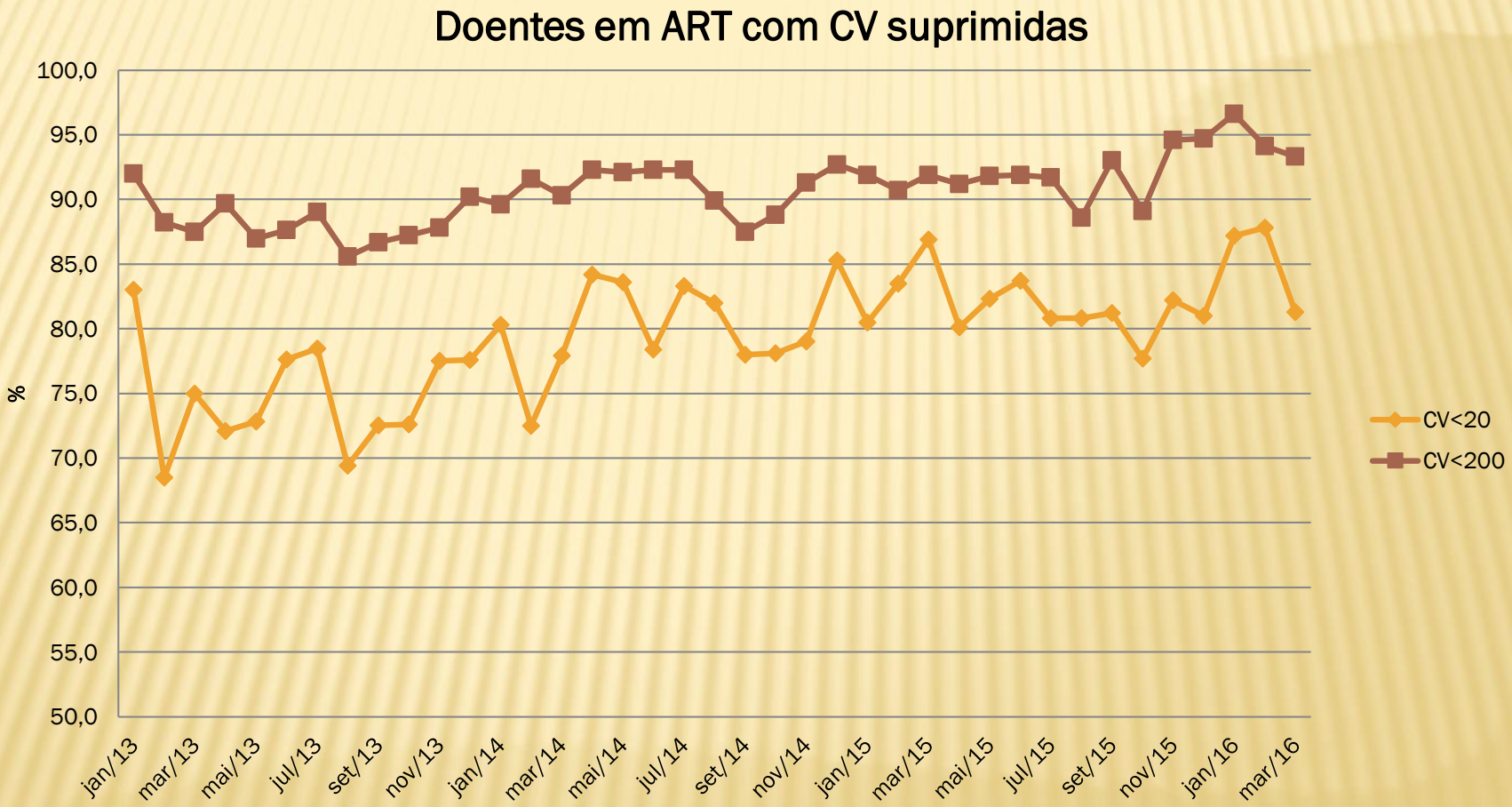
DUAS REALIDADES MUITO DISTINTAS… MAS COM ALGUNS PONTOS EM COMUM…

- HIV
  - Cenário Presente
    - Refratários: 35,4%
    - Doentes em TARc: 920
    - % de D. em TT
      - 75,6% (D. Ativos)
      - 48,9% (D. Existentes)
    - % de D. c/ CV < 20
      - 80% (D. sob TARc)
      - 60% (D. Ativos)
      - 39,1% (D. Existentes)
  - Cenário "Real"
    - Total de Infetados: 3500 (+ 750)
      - % de D. em TT: 26,3%
      - % de D. c/ CV < 20: 21%
- Hepatites (Mono-infeção)
  - Refratários: 37,3%
- Exercício Teórico
  - 95% c/ HCV= 800 Doentes
    - 25%: Ac. HCV + c/ PCV –
    - 25% já anteriormente Tratados
    - 120 c/ DAA
  - Admite-se existirem presentemente: 280 Doentes ainda para tratar
- Se a prevalência e o nº p/ diagnosticar for idêntica ao HIV: + 300 Doentes
  - Se 25% tiverem Ac + e CV –
    - Ficam: 225 Doentes
- Total p/ Tratar: 405 doentes(?)

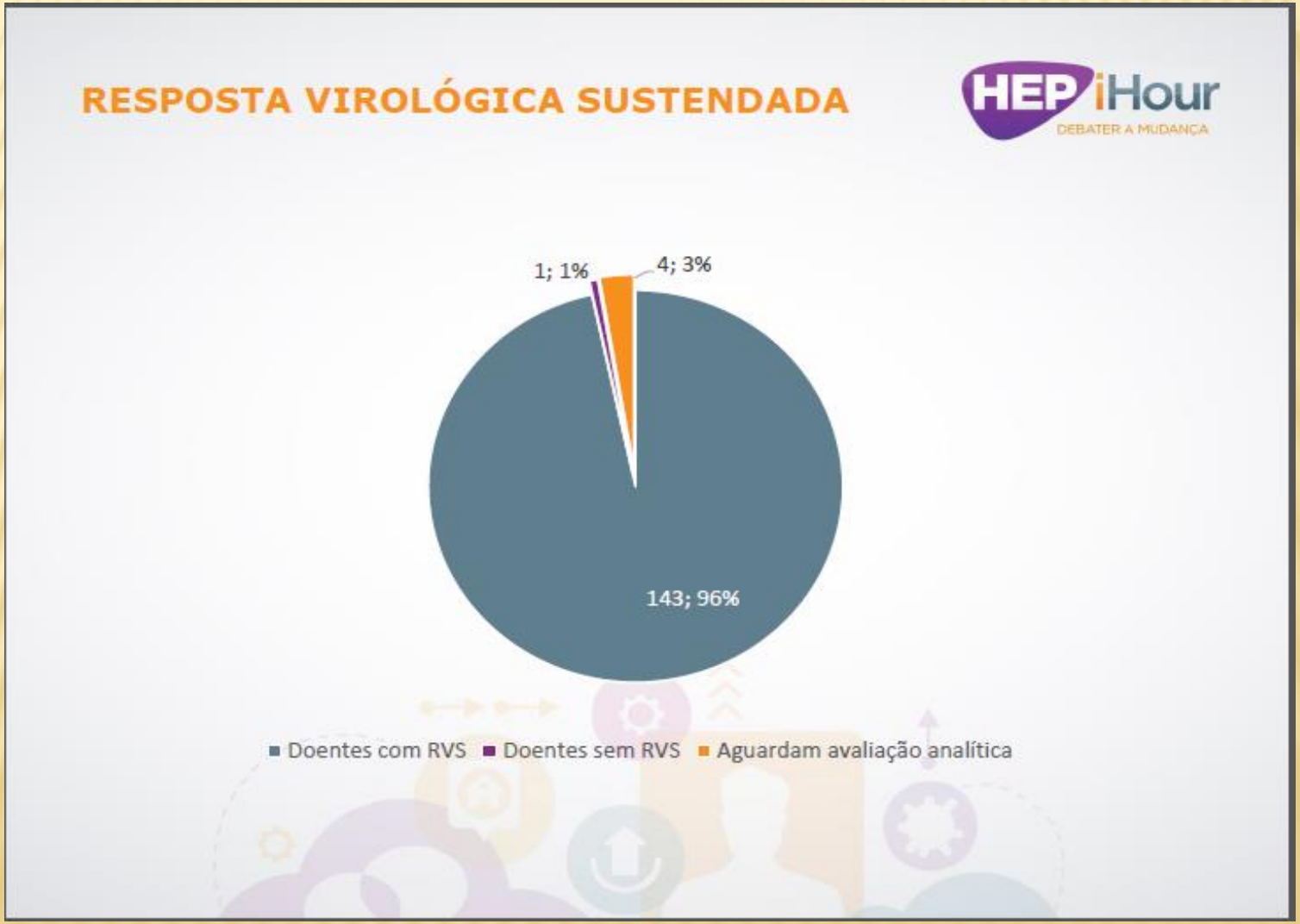
OS RESULTADOS DE DUAS IMPORTANTES INICIATIVAS

- Consulta do Viajante
  - Dos 48 que aceitaram fazer o teste rápido p/ HIV
    - 1 Positivo (2%)
- Projeto da Unidade Móvel do GAT
  - Doentes referenciados em 2015-2016: 25
    - Mantêm-se em seguimento: 11
      - HIV positivos: 3
      - HCV positivos: 9
    - Altas e Transferências: 3
    - Abandonaram: 11 (44%)
      - HIV: 1
      - HCV: 10

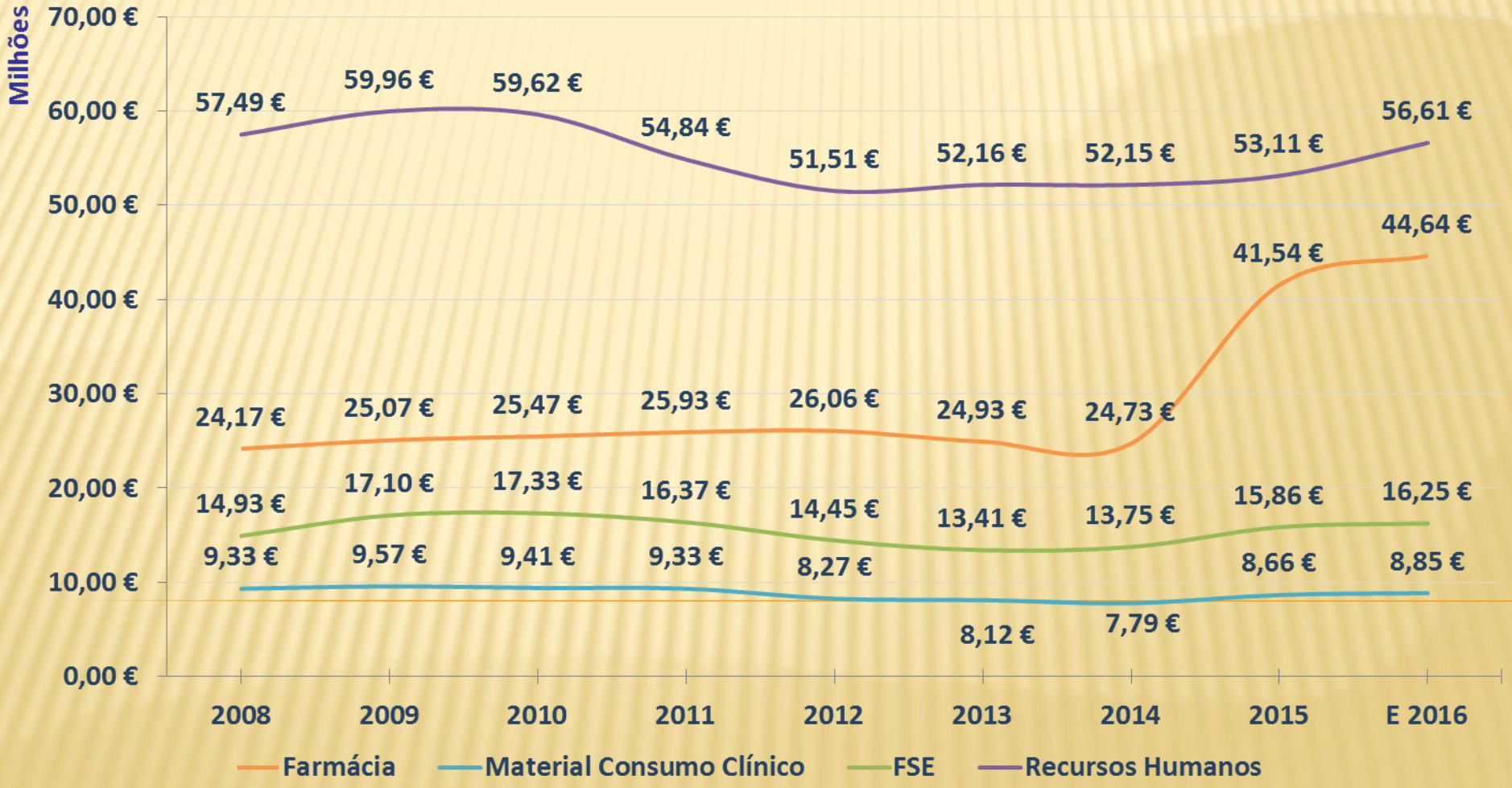
A NECESSIDADE DE MONITORIZARMOS EM PERMANÊNCIA E ADEQUADAMENTE A NOSSA ATUAÇÃO



RESULTADOS DA NOSSA EXPERIÊNCIA NO TRATAMENTO DA HEPATITE C C/ OS NOVOS FÁRMACOS

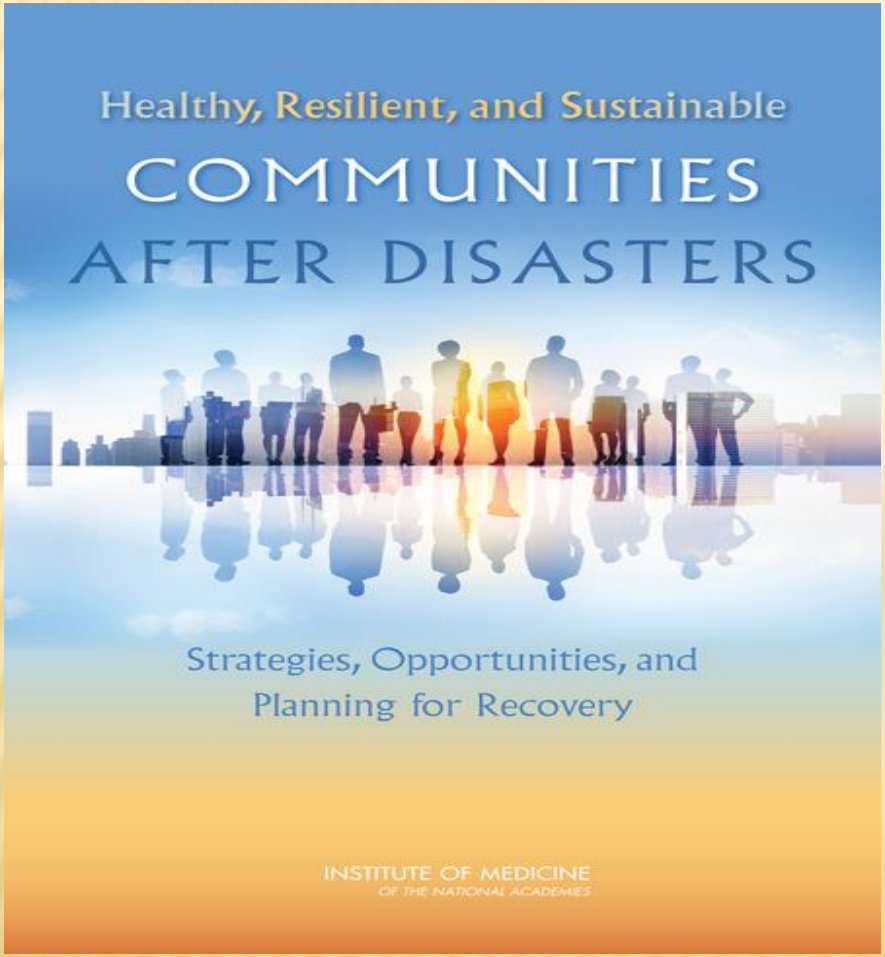


Evolução de Custos

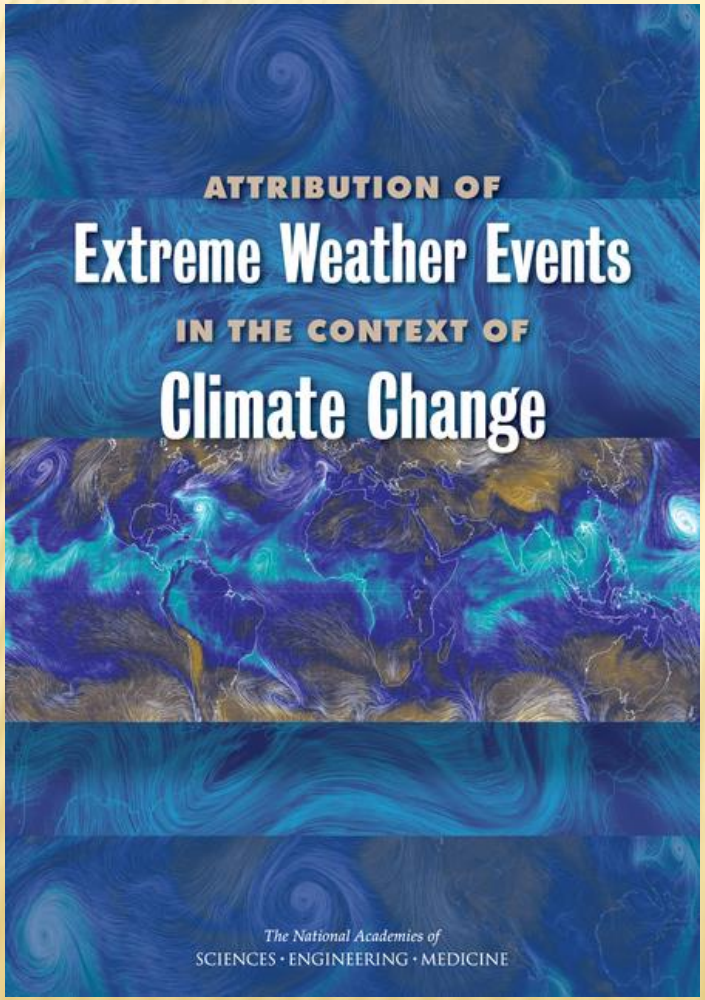


VI)- CONCLUSÕES

TER EM CONSIDERAÇÃO AS NOVAS REALIDADES EPIDEMIOLÓGICAS …



… TAIS COMO OS EVENTOS METEOROLÓGICOS EXTREMOS…



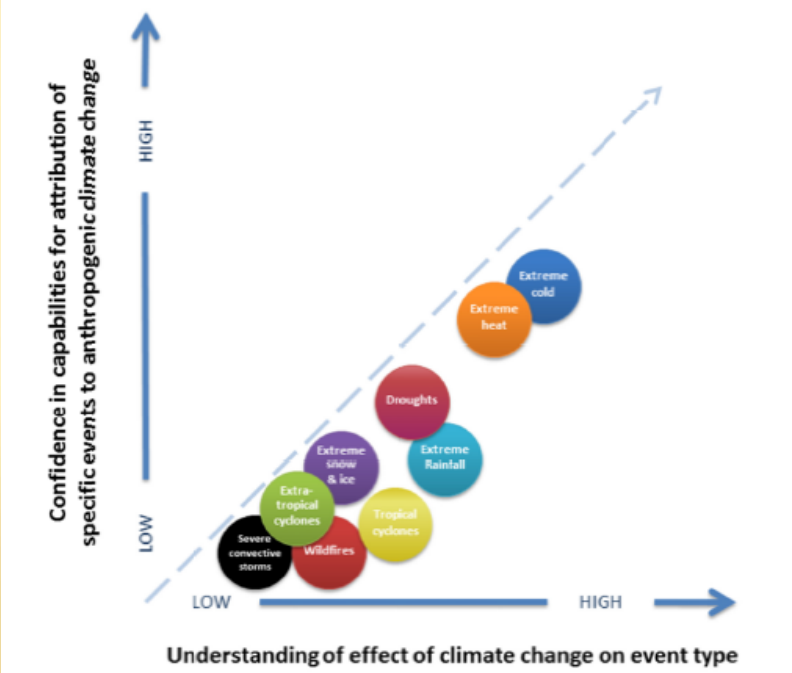
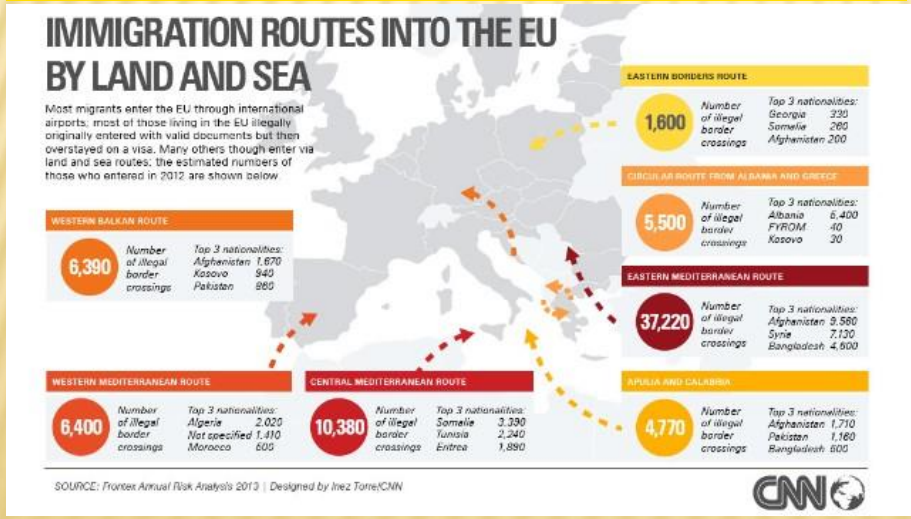


FIGURE S.4 Schematic depiction of this report's assessment of the state of attribution science for different event types. The horizontal position of each event type reflects an assessment of the level of understanding of the effect of climate change on the event type, and corresponds to the right-most column of Table S.1. The vertical position of each event type indicates an assessment of scientific confidence in current capabilities for attribution of specific events to anthropogenic climate change for that event type, and draws upon all three columns of Table S.1. A position below the 1:1 line indicates an assessment that there is potential for improvement in attribution capability through technical progress alone (such as improved modeling, or the recovery of additional historical data), which would move the symbol upward. A position above the 1:1 line is not possible because this would indicate confident attribution in the absence of adequate understanding. In all cases, there is potential to increase event attribution confidence by overcoming remaining challenges that limit the current level of understanding. See Box 4.1 for more detail.

... E TAMBÉM O BIOTERRORISMO, OS GRANDES MOVIMENTOS MIGRATÓRIOS E AS VIAGENS AÉREAS!!!

FIGURE A6-2 The global aviation network. Lines show direct links between airports, and the colour indicates passenger capacity in people per day (thousands [red]; hundreds [yellow]; tens [blue]). Routes linking regions at similar latitudes (in the northern or southern hemisphere) represent pathways that pathogens can move along to reach novel regions. Notably, air traffic to most places in Africa, regions of South America, and parts of central Asia is low. If travel increases in these regions, additional introductions of vector-borne pathogens are probable.
SOURCE: Adapted from Hufnagal et al., 2004.



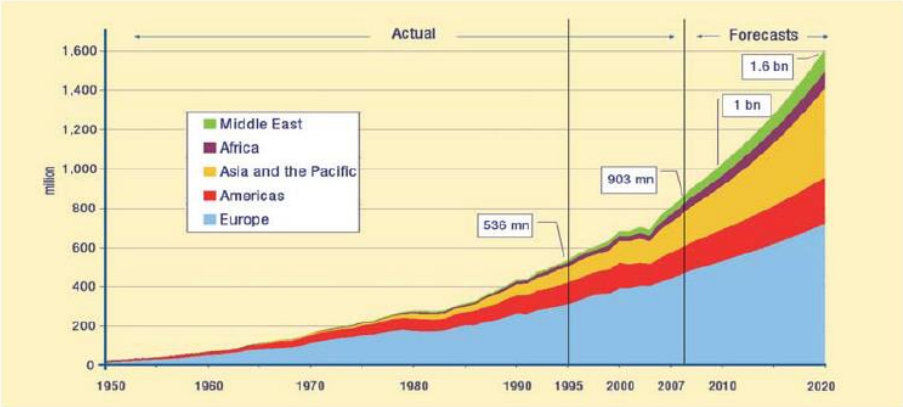


FIGURE WO-4 International tourist arrivals by region (in millions), 1950-2020.
SOURCE: Reprinted with permission from the UNWTO (2008).

TRATA-SE EFETIVAMENTE DE UMA QUESTÃO DE SEGURANÇA!!!

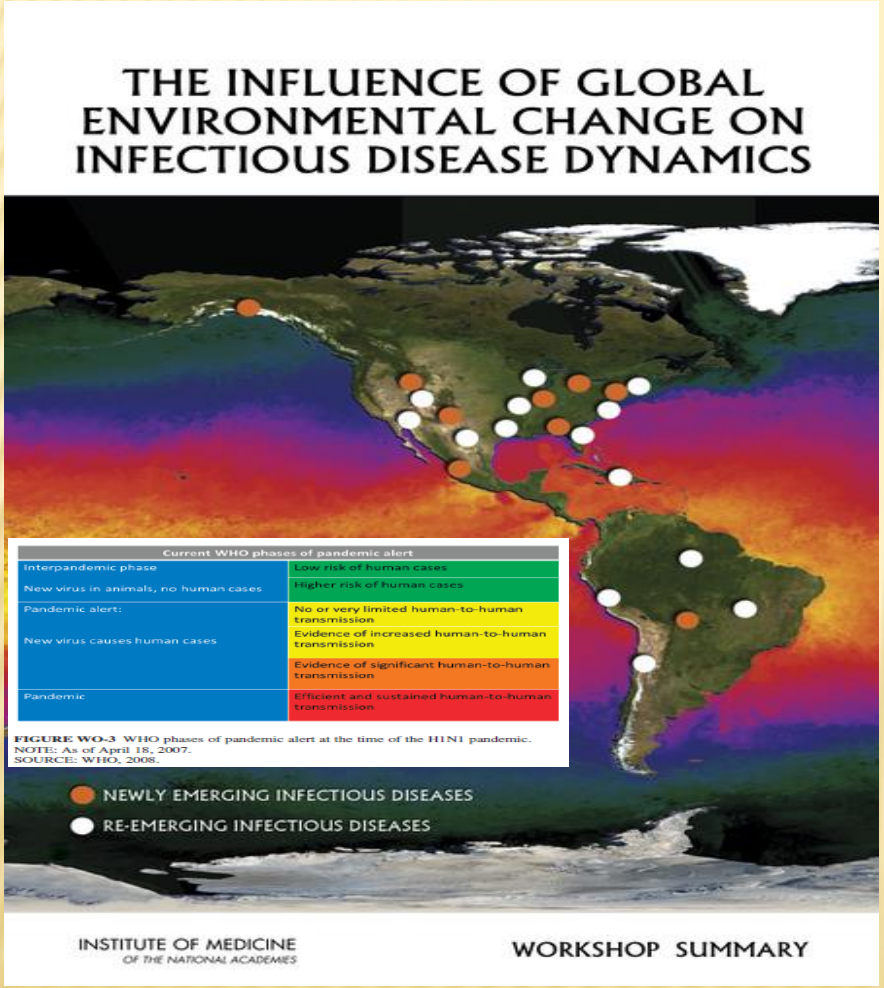
Public Policy

Global health security: the wider lessons from the west African Ebola virus disease epidemic

David L Heymann, Lincoln Chen, Keizo Takemi, David P Fidler, Jordan W Tappero, Matthew J Thomas, Thomas A Kenyon, Thomas R Frieden, Derek Yach, Sania Nishtar, Alex Kalache, Pierre L Olliaro, Peter Horby, Eric Tarrette, Lawrence O Gostin, Margaret-Ann Nkomondo-Sigonda, Daniel Carpenter, Simon Rushton, Louis Lillywhite, Bhimsen Devkota, Khalid Koser, Rob Yates, Ranu S Dhillon, Ravi P Rannan-Eliya

The Ebola virus disease outbreak in West Africa was unprecedented in both its scale and impact. Out of this human calamity has come renewed attention to global health security—its definition, meaning, and the practical implications for programmes and policy. For example, how does a government begin to strengthen its core public health capacities, as demanded by the International Health Regulations? What counts as a global health security concern? In the context of the governance of global health, including WHO reform, it will be important to distil lessons learned from the Ebola outbreak. *The Lancet* invited a group of respected global health practitioners to reflect on these lessons, to explore the idea of global health security, and to offer suggestions for next steps. Their contributions describe some of the major threats to individual and collective human health, as well as the values and recommendations that should be considered to counteract such threats in the future. Many different perspectives are proposed. Their common goal is a more sustainable and resilient society for human health and wellbeing.

A NECESSIDADE DE UMA PERMANENTE E RÁPIDA VIGILÂNCIA ATRAVÉS DE MEIOS EFICAZES...



Current WHO phases of pandemic alert	
Interpandemic phase	Low risk of human cases
New virus in animals, no human cases	Higher risk of human cases
Pandemic alert: New virus causes human cases	No or very limited human-to-human transmission
	Evidence of increased human-to-human transmission
	Evidence of significant human-to-human transmission
Pandemic	Efficient and sustained human-to-human transmission

FIGURE WO-3 WHO phases of pandemic alert at the time of the H1N1 pandemic.
NOTE: As of April 18, 2007.
SOURCE: WHO, 2008.

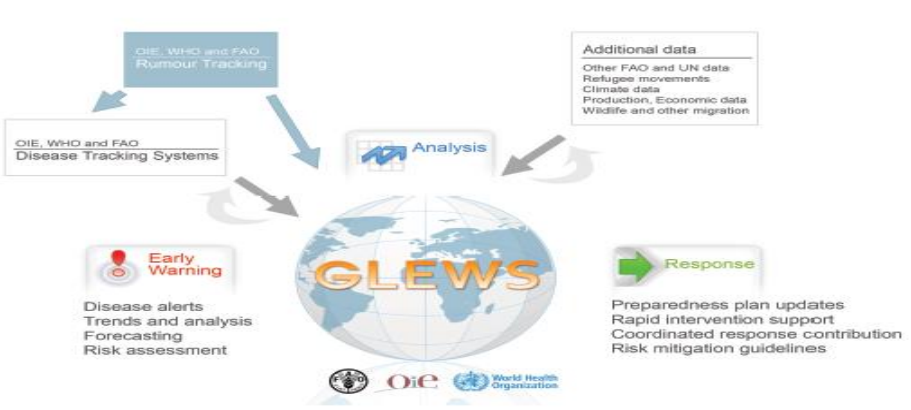


FIGURE 5-1 Global Early Warning and Response System (GLEWS) for Major Animal Diseases, including Zoonoses.
SOURCE: OIE (2009).

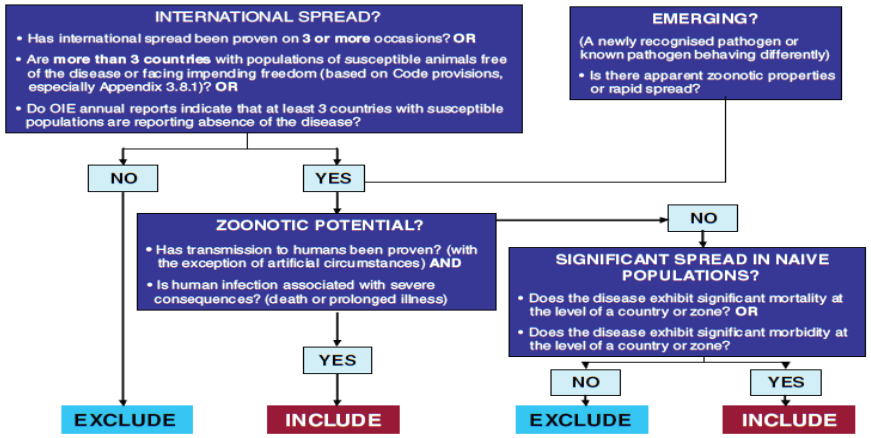
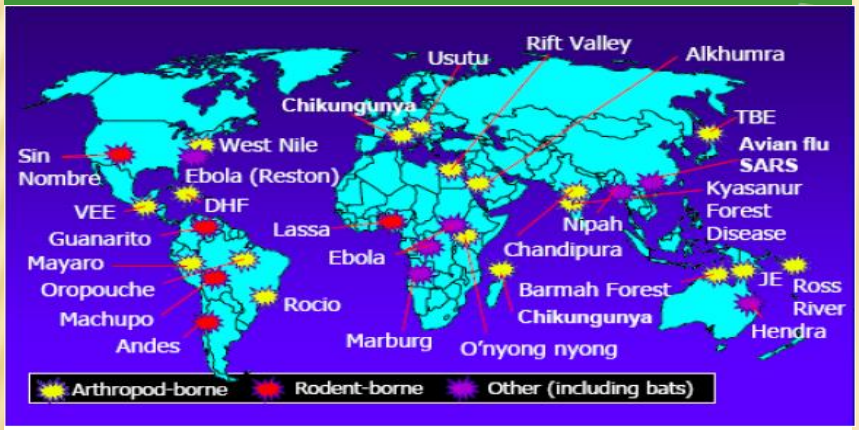
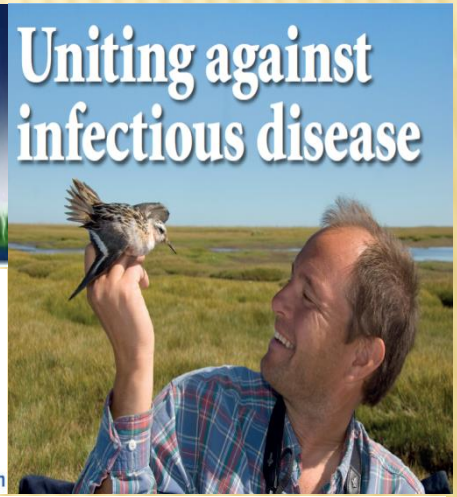


FIGURE 5-3 OIE's disease notification criteria.
SOURCE: OIE (2008).

… E DE SABER UNIR ESFORÇOS!!!



One Health
World Health Through Collaboration



World Organisation for Animal Health

World Health Organization

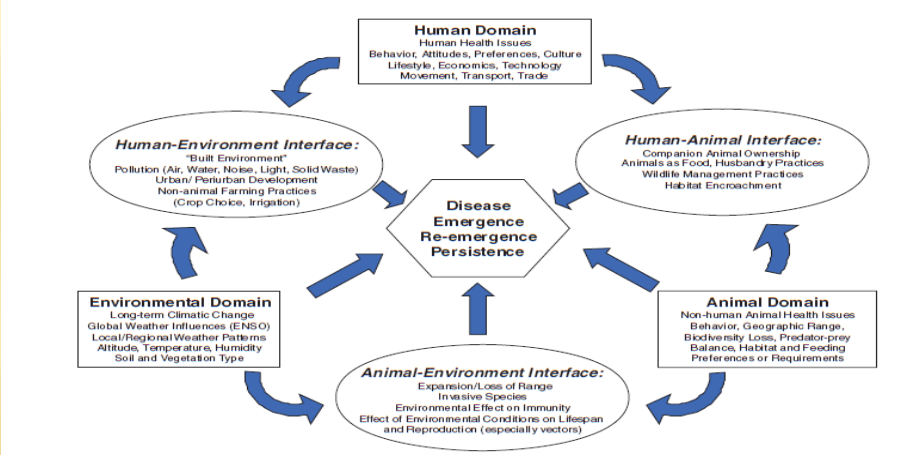


FIGURE 3-1 Overview of the driver-pathogen interactions that contribute to the emergence of infectious zoonotic diseases.
SOURCE: Treadwell (2008).

PORQUE ESTAMOS (AINDA) DESPROVIDOS DA ARMA MAIS EFICAZ DE PREVENÇÃO NA MAIORIA DOS CASOS

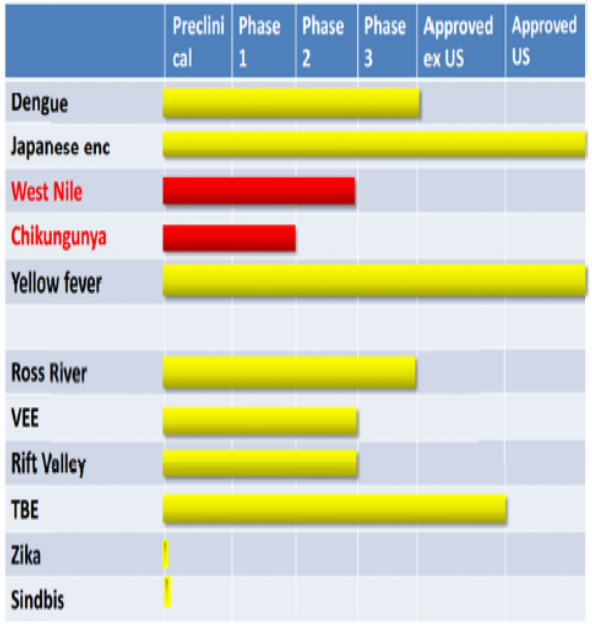


FIGURE WO-22 Vaccines against vector-borne diseases with potential for introduction and spread into the United States.
SOURCE: As presented by Thomas Monath on September 17, 2014.

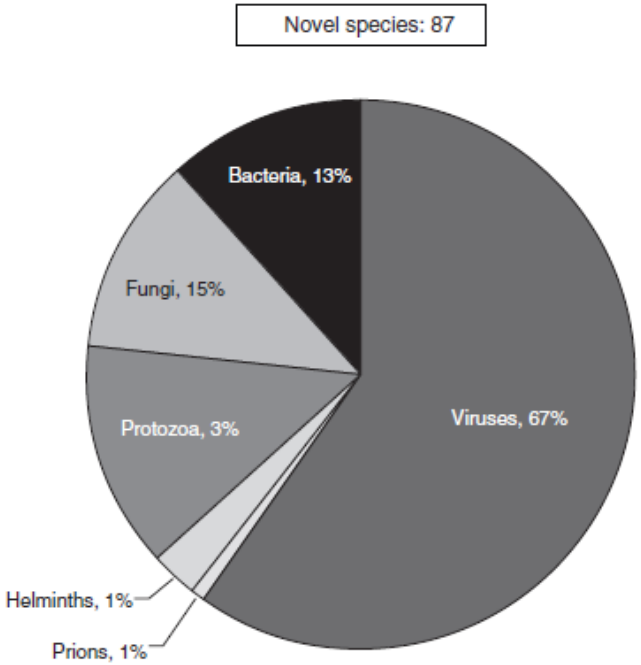
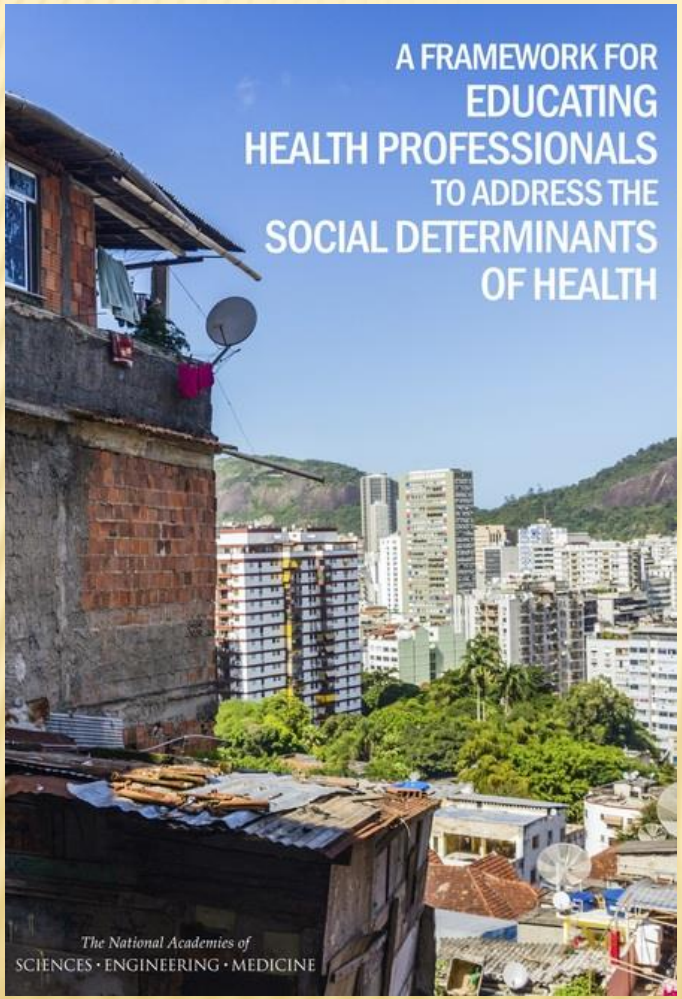


FIGURE 2-9 Patterns of pathogen discovery. Percentage of novel pathogen species by type.
SOURCE: Adapted from data by Woolhouse and Gaunt (2007).

É NECESSÁRIO FAZER POIS UM GRANDE ESFORÇO PARA A EDUCAÇÃO CÍVICA DOS PROFISSIONAIS E DOS CIDADÃOS...



AS AJUDAS QUE NECESSITAMOS...

SUPPLEMENT ARTICLE

Use of Electronic Health Records and Clinical Decision Support Systems for Antimicrobial Stewardship

Graeme N. Forrest,[1] Trevor C. Van Schooneveld,[2] Ravina Kullar,[3] Lucas T. Schulz,[4] Phu Duong,[3] and Michael Postelnick[5]

[1]Division of Infectious Diseases, Portland Veterans Affairs Medical Center, Portland, Oregon; [2]University of Nebraska Medical Center, Omaha; [3]Global Medical Affairs, Cubist Pharmaceuticals, Lexington, Massachusetts; [4]University of Wisconsin Hospital and Clinics, Madison; and [5]Northwestern Memorial Hospital, Chicago, Illinois

Electronic health records (EHRs) and clinical decision support systems (CDSSs) have the potential to enhance antimicrobial stewardship. Numerous EHRs and CDSSs are available and have the potential to enable all clinicians and antimicrobial stewardship programs (ASPs) to more efficiently review pharmacy, microbiology, and clinical data. Literature evaluating the impact of EHRs and CDSSs on patient outcomes is lacking, although EHRs with integrated CDSSs have demonstrated improvements in clinical and economic outcomes. Both technologies can be used to enhance existing ASPs and their implementation of core ASP strategies. Resolution of administrative, legal, and technical issues will enhance the acceptance and impact of these systems. EHR systems will increase in value when manufacturers include integrated ASP tools and CDSSs that do not require extensive commitment of information technology resources. Further research is needed to determine the true impact of current systems on ASP and the ultimate goal of improved patient outcomes through optimized antimicrobial use.

Keywords. antimicrobial stewardship; clinical decision support system; electronic health record.

Table 2. Clinical Decision Support Systems and Patient Outcomes

Reference Number	Study Design	Software	Setting	Results	Notes
[9]	Pre–Post	TheraDoc	ICU	Significant declines in antibiotic susceptibility mismatches, duration of excess drug doses, and orders for antibiotics to which the patient was allergic ($P < .01$). Also had a 70% reduction in ADE ($P = .018$).	No differences in mortality between groups
[10]	Prospective	TheraDoc	Inpatient	22.8% decline in antibiotic use, a $70 per-patient decrease in antibiotic costs, a decline in antibiotic adverse events, and a decline in hospital mortality over a 7-year period (3.65% to 2.65%, $P < .001$).	Time period evaluated was from 1988 to 1994
[56]	Cluster randomized	TheraDoc	Community clinics	Antibiotic prescribing rate declined from 84.1 to 75.3 prescriptions per 100 person-years ($P = .03$). Also reduced inappropriate antibiotic prescribing, from 32% to 5% ($P = .03$).	Macrolides reduced 28%, cephalosporins 7%, and penicillins 6%
[57]	Pre–post	Unknown	PPRnet—outpatients	Inappropriate antibiotic use declined 0.6% for ARI and 16.6% for broad antibiotics in adults.	Modest effect
[58]	Prospective interventional	Unknown	PPRnet	Antibiotic use did not change (+1.57%), decrease in broad antibiotic use for ARI (−16%).	Decreased broad antibiotic use
[59]	Retrospective observational	Unknown	Veterans Affairs—outpatients	Increase in antibiotic usage (0.63 to 0.72, $P = .001$).	No effect seen targeting ARI antibiotics
[60]	Prospective	Local program	Outpatients	Overall antibiotic prescribing 39% vs non-CDSS of 43%. ARI was 54% vs 59%.	CDSS form only used in 6% of ARI visits
[61]	Prospective	TheraDoc	Pediatrics	59% reduction in erroneous antimicrobial use, 28% decline in excess dose-days. No change in ADE or susceptibility mismatches.	
[62]	Cluster-randomized study	TREAT	Inpatient	Better empiric antibiotic therapy (70% vs 57%, $P < .001$). Length of stay and costs (−12%) also reduced.	No impact on mortality
[63]	Survival analysis	TREAT	Inpatient, single center	The ITT group 180-day survival in the control group was 68% vs 71% in the intervention group ($P = .1$). In the PP analysis, the survival percentages were 68% vs 74% ($P = .04$).	Analysis of only 1 center of whole study that analyzed 30-day mortality
[64]	Prospective	Antibiograms	ICU	Increased susceptibility to imipenem (18.3%/year) and gentamicin (11.6%/year).	No clinical outcomes data.

Abbreviations: ADE, adverse drug event; ARI, acute respiratory infection; CDSS, clinical decision support system; ICU, intensive care unit; ITT, intent to treat; PP, per protocol; PPRnet, Practice Partners Research Network.

… COMO NESTE EXEMPLO…

BJCP British Journal of Clinical Pharmacology

Therapeutic drug monitoring of antimicrobials

Jason A. Roberts,[1,4,5] Ross Norris,[2,7,8] David L. Paterson[3,6] & Jennifer H. Martin[9]

[1]Burns, Trauma and Critical Care Research Centre, [2]School of Pharmacy and [3]Centre for Clinical Research, The University of Queensland, Brisbane, Queensland, Australia, [4]Department of Intensive Care, [5]Pharmacy Department and [6]Department of Infectious Diseases, Royal Brisbane and Women's Hospital, Brisbane, Queensland, Australia, [7]Australian Centre for Paediatric Pharmacokinetics, Mater Pharmacy Services, Brisbane, Queensland, Australia, [8]School of Pharmacy, Griffith University, Gold Coast, Queensland, Australia and [9]The University of Queensland School of Medicine Southside, Princess Alexandra Hospital, Woolloongabba, Brisbane, Queensland, Australia

Wong *et al. BMC Infectious Diseases* 2014, **14**:288
http://www.biomedcentral.com/1471-2334/14/288

BMC Infectious Diseases

REVIEW Open Access

How do we use therapeutic drug monitoring to improve outcomes from severe infections in critically ill patients?

Gloria Wong[1†], Fekade Bruck Sime[2,3†], Jeffrey Lipman[1,4] and Jason A Roberts[1,2,4*]

Abstract

High mortality and morbidity rates associated with severe infections in the critically ill continue to be a significant issue for the healthcare system. In view of the diverse and unique pharmacokinetic profile of drugs in this patient population, there is increasing use of therapeutic drug monitoring (TDM) in attempt to optimize the exposure of antibiotics, improve clinical outcome and minimize the emergence of antibiotic resistance. Despite this, a beneficial clinical outcome for TDM of antibiotics has only been demonstrated for aminoglycosides in a general hospital patient population. Clinical outcome studies for other antibiotics remain elusive. Further, there is significant variability among institutions with respect to the practice of TDM including the selection of patients, sampling time for concentration monitoring, methodologies of antibiotic assay, selection of PK/PD targets as well as dose optimisation strategies. The aim of this paper is to review the available evidence relating to practices of antibiotic TDM, and describe how TDM can be applied to potentially improve outcomes from severe infections in the critically ill.

Keywords: TDM, Antibiotic, Pharmacokinetics, Pharmacodynamics

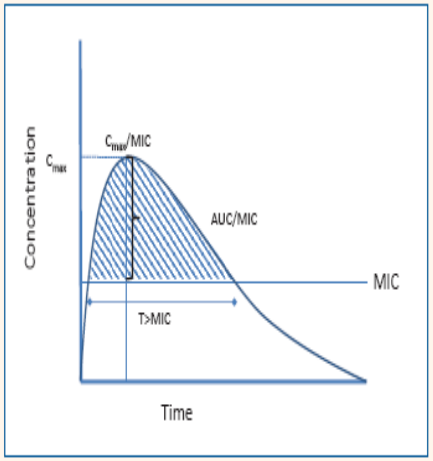
Comparative Effectiveness Review Number 136

Effective Health Care Program

Pharmacokinetic/Pharmacodynamic Measures for Guiding Antibiotic Treatment for Hospital-Acquired Pneumonia

Executive Summary

Figure A. Ratios related to the minimum inhibitory concentration of the organisms



AUC = antibiotic area under the curve; AUC/MIC = the ratio of the antibiotic area under the curve to the time above the minimum inhibitory concentration needed to inhibit microorganisms; Cmax = the maximum serum concentration needed to inhibit microorganisms; Cmax/MIC = ratio of maximum serum concentration (or peak) to the time above the minimum inhibitory concentration needed to inhibit microorganisms; MIC = minimum inhibitory concentration; T = time.

… A IMPLEMENTAÇÃO DE TECNOLOGIAS QUE PERMITAM ENCURTAR COM SEGURANÇA A DURAÇÃO DOS CURSOS DE TRATAMENTO …

Schuetz et al. BMC Medicine 2011, 9:107
http://www.biomedcentral.com/1741-7015/9/107

BMC Medicine

REVIEW Open Access

Procalcitonin for diagnosis of infection and guide to antibiotic decisions: past, present and future

Philipp Schuetz[1*], Werner Albrich[2] and Beat Mueller[2]

Abstract

There are a number of limitations to using conventional diagnostic markers for patients with clinical suspicion of infection. As a consequence, unnecessary and prolonged exposure to antimicrobial agents adversely affect patient outcomes, while inappropriate antibiotic therapy increases antibiotic resistance. A growing body of evidence supports the use of procalcitonin (PCT) to improve diagnosis of bacterial infections and to guide antibiotic therapy. For patients with upper and lower respiratory tract infection, post-operative infections and for severe sepsis patients in the intensive care unit, randomized-controlled trials have shown a benefit of using PCT algorithms to guide decisions about initiation and/or discontinuation of antibiotic therapy. For some other types of infections, observational studies have shown promising first results, but further intervention studies are needed before use of PCT in clinical routine can be recommended. The aim of this review is to summarize the current evidence for PCT in different infections and clinical settings, and discuss the reliability of this marker when used with validated diagnostic algorithms.

Cost-Effectiveness of Procalcitonin-Guided Antibiotic Therapy for Outpatient Management of Acute Respiratory Tract Infections in Adults

Constantinos I. Michaelidis, BA[1], Richard K. Zimmerman, MD, MPH[2], Mary Patricia Nowalk, PhD[2], Michael J. Fine, MD, MSc[3,4], and Kenneth J. Smith, MD, MS[3]

[1]University of Pittsburgh School of Medicine, Pittsburgh, PA, USA; [2]Department of Family Medicine and Clinical Epidemiology, University of Pittsburgh School of Medicine, Pittsburgh, PA, USA; [3]Division of General Internal Medicine, University of Pittsburgh School of Medicine, Pittsburgh, PA, USA; [4]Center for Health Equity Research and Promotion, VA Pittsburgh Healthcare System, Pittsburgh, PA, USA.

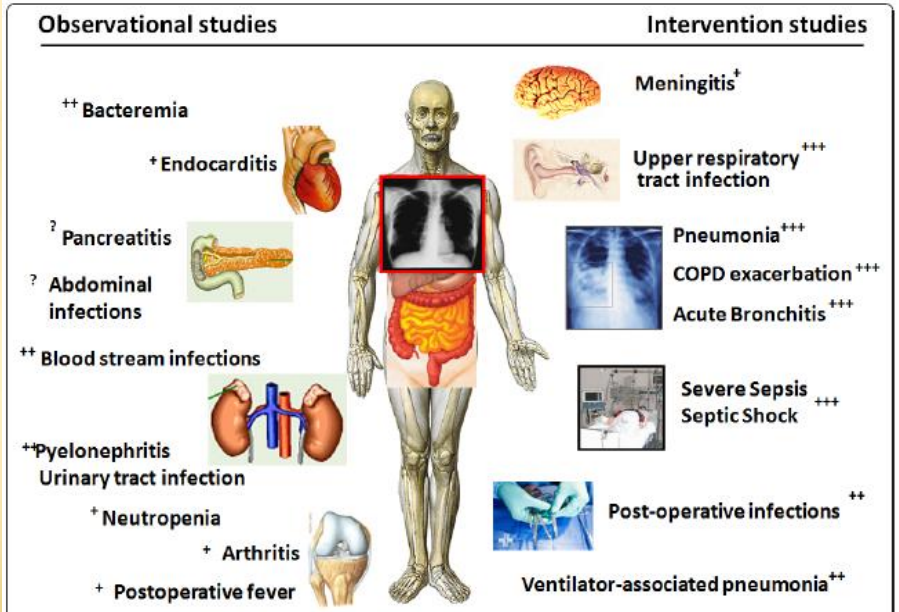


Figure 1 Available evidence concerning PCT in different infections derived from observational and randomized-controlled intervention studies. While for some infections, intervention studies have investigated benefit and harm of using PCT for antibiotic decisions (right side), for other infections only results from diagnostic (observation) studies are available with mixed results (left side). Abbreviations: PCT, procalcitonin. + moderate evidence in favor of PCT; ++ good evidence in favor of PCT; +++ strong evidence in favor of PCT; ? evidence in favor or against the use of PCT still undefined

… E QUE TORNEM RÁPIDO O DIAGNÓSTICO DIFERENCIAL DO TIPO DE AGENTE MICROBIANO ENVOLVIDO!!!

CMR
Journals.ASM.org

Matrix-Assisted Laser Desorption Ionization–Time of Flight Mass Spectrometry: a Fundamental Shift in the Routine Practice of Clinical Microbiology

Andrew E. Clark,[a] Erin J. Kaleta,[b] Amit Arora,[c] Donna M. Wolk[d,e,f]
Department of Veterinary Science and Microbiology, University of Arizona, Tucson, Arizona, USA[a]; Department of Laboratory Medicine and Pathology, Mayo Clinic, Rochester, Minnesota, USA[b]; Department of Surgery, University of Arizona, Tucson, Arizona, USA[c]; Department of Pathology, University of Arizona Medical Center, Tucson, Arizona, USA[d]; The BIOS Institute, University of Arizona, Tucson, Arizona, USA[e]; Geisinger Health Systems, Danville, Pennsylvania, USA[f]

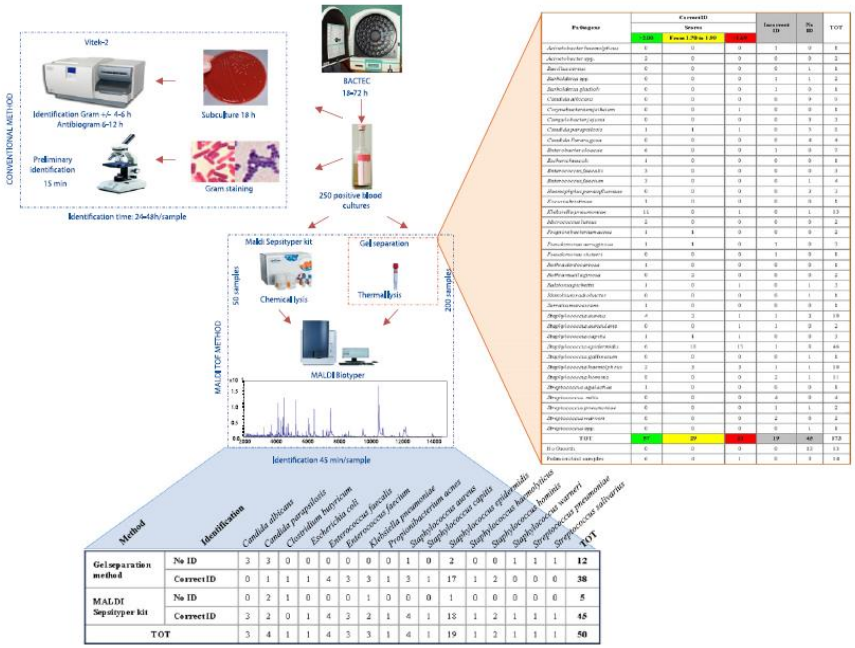


Fig. 6 – MALDI-TOF MS-based workflow for positive blood cultures designed by including both Sepsityper™ and homebrew protocols (*e.g.*, gel Vacutainer). The conventional methods based on Gram staining and biochemical identification are compared with the two fast MALDI-TOF MS-based workflows. In the inset, the tables with ID results for each identified species are reported.

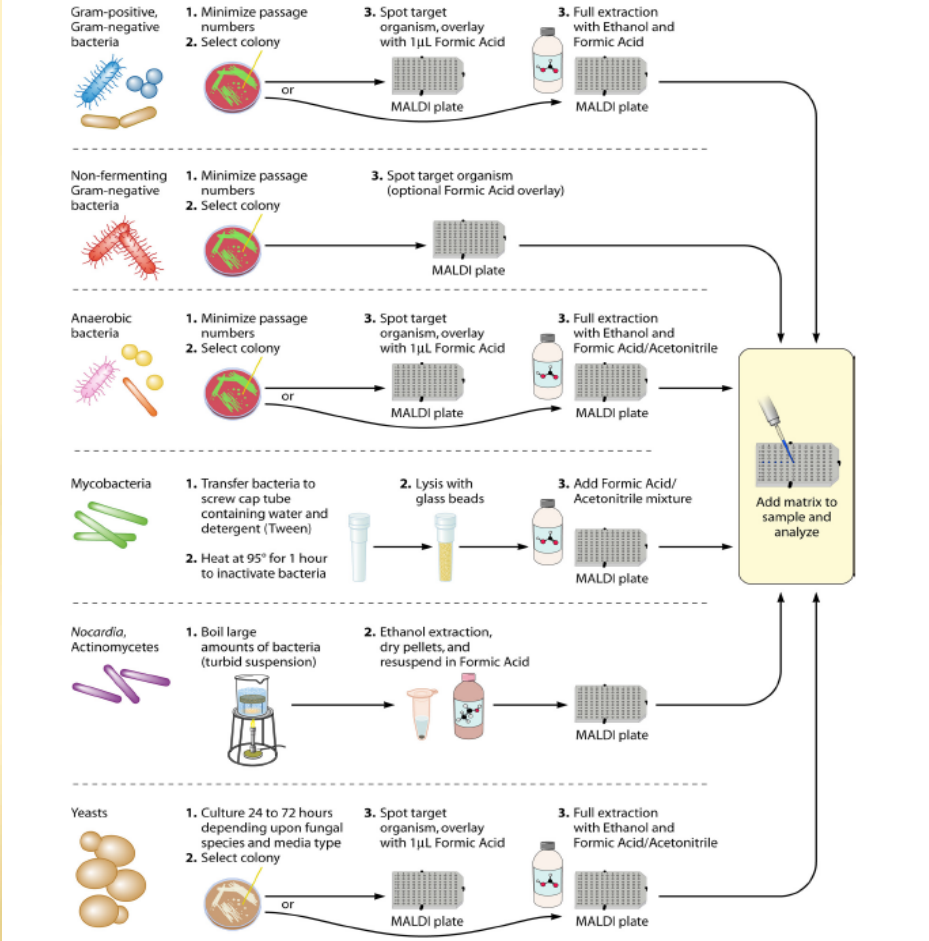
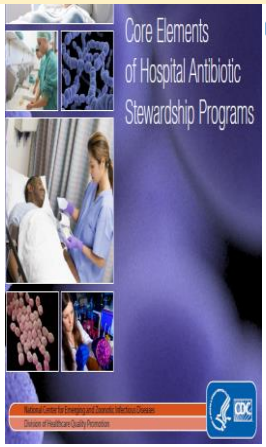


FIG 3 Additional suggestions for MALDI-TOF MS sample preparations for use with different classes of microbes. Different groups of microorganisms vary fundamentally in their cellular composition and architecture. These differences have been demonstrated to affect the quality of spectra generated during MS experiments and, thus, the accuracy of MALDI-TOF MS-derived identifications. As such, investigators from a number of independent studies have evaluated different methods for sample preparation of different groups of microorganisms, ranging directly from intact-cell to full-protein-extraction-based methodologies. Results from these studies are summarized here. Proper biological safety precautions should be followed with respect to dangerous members of these groups of organisms.

AQUILO A ESTAMOS OBRIGADOS…



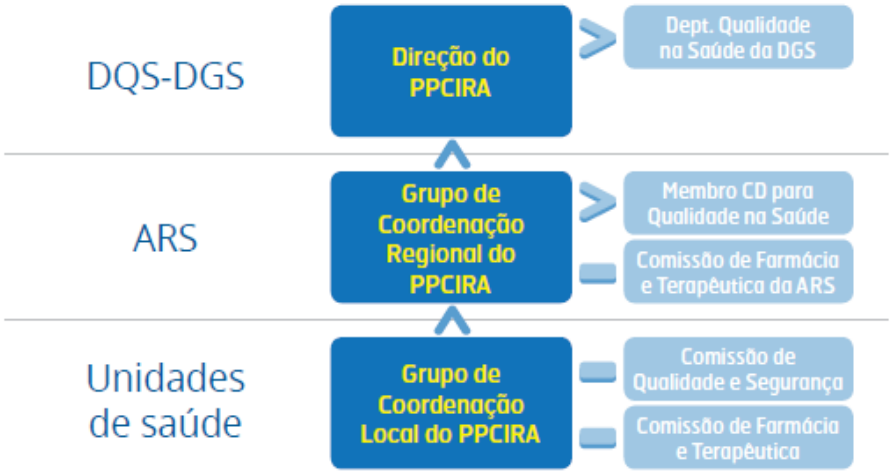
PATIENT SAFETY AND HEALTHCARE-ASSOCIATED INFECTIONS: *REPORT FROM THE*

COMMISSION TO THE COUNCIL June 2014

2. ESTRUTURA DE GESTÃO E OPERACIONALIZAÇÃO DO PROGRAMA

Figura 1. Estrutura de gestão do Programa de Prevenção e Controlo de Infeções e de Resistência aos Antimicrobianos (PPCIRA)

Estrutura de gestão do PPCIRA



Fonte: PPCIRA / DGS / 2013

… A EXTREMA NECESSIDADE DE DISPOR CE MEIOS PARA GARANTIR OS FUNDAMENTAIS "*LINKAGE*" E O "*RETENCION TO CARE*"…

Linkage, Engagement, and Retention in HIV Care Among Vulnerable Populations Volume **21** Issue **4** September/October **2013**

Perspective

Linkage, Engagement, and Retention in HIV Care Among Vulnerable Populations: "I'm Sick and Tired of Being Sick and Tired"

There are disparities in engagement and retention in HIV care and outcomes of care across segments of society. For example, HIV mortality rates remain markedly elevated among black women and men compared with their white counterparts. These differences reflect broader disparities across social, economic, and cultural lines. Improvement in engagement and retention in HIV care requires interventions that account for forces present in the socioecologic framework of health behaviors. Improvement in linkage to care at HIV testing is crucial to overall engagement and retention in care. Strategies for linkage to care at testing can help overcome many of the forces that result in failure to engage and remain in care by starting the patient on a solid path to clinical care. This article summarizes a presentation by Victoria A. Cargill, MD, MSCE, at the IAS–USA continuing education program held in New York, New York, in May 2013.

Keywords: *HIV care disparities, linkage to care, socioecologic framework, engagement and retention in care, practitioner behavior*

IAS–USA *Topics in Antiviral Medicine*

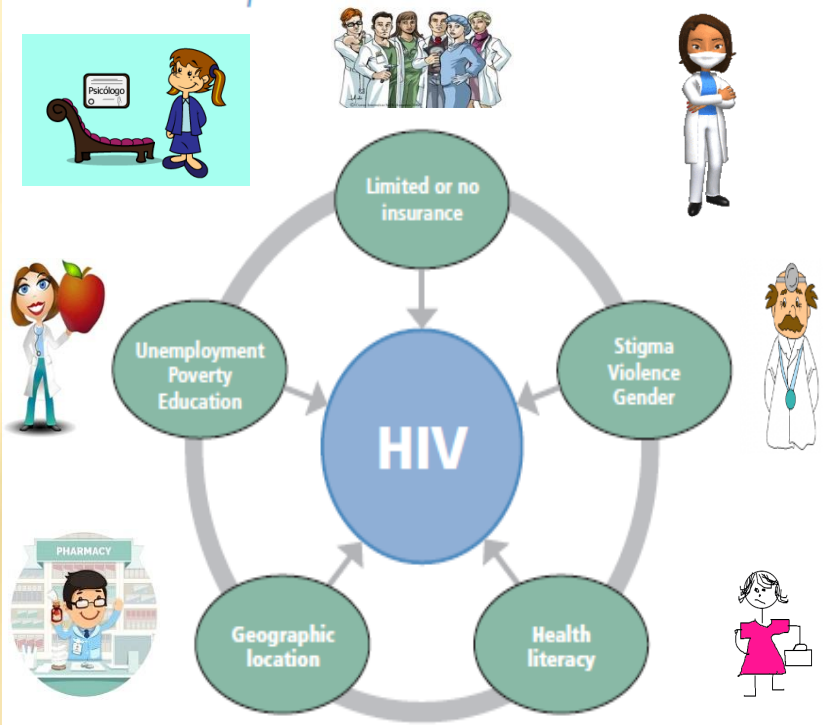
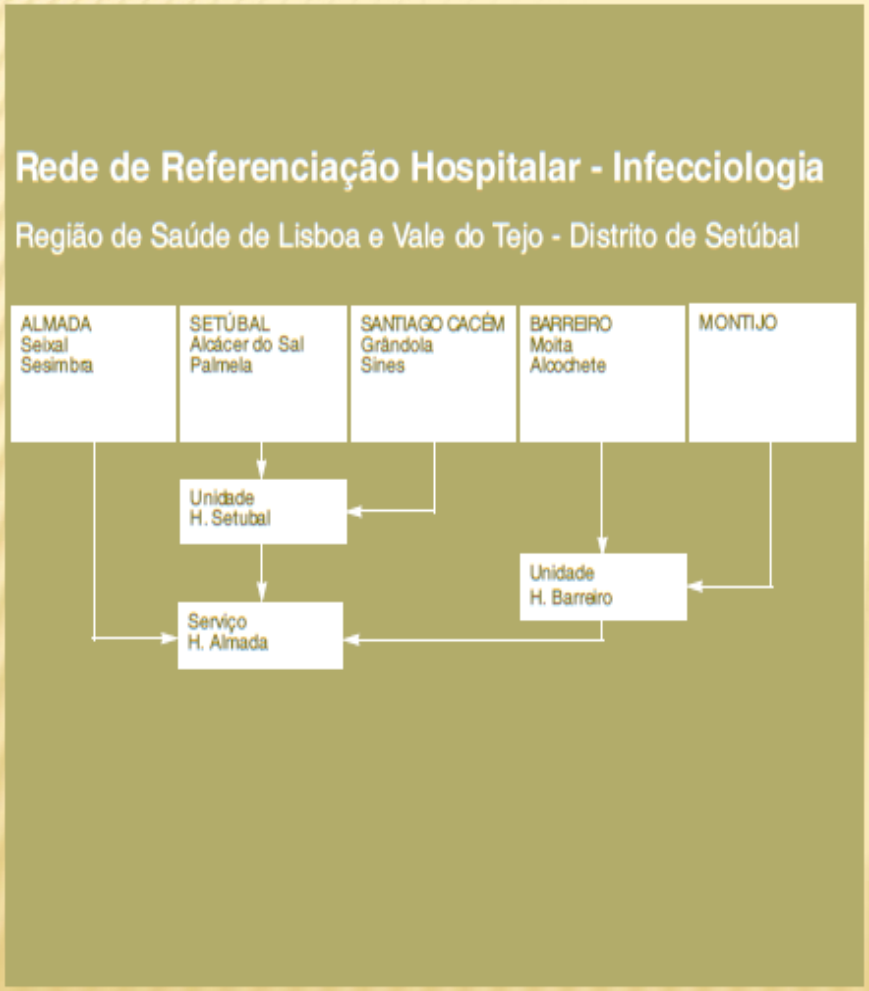
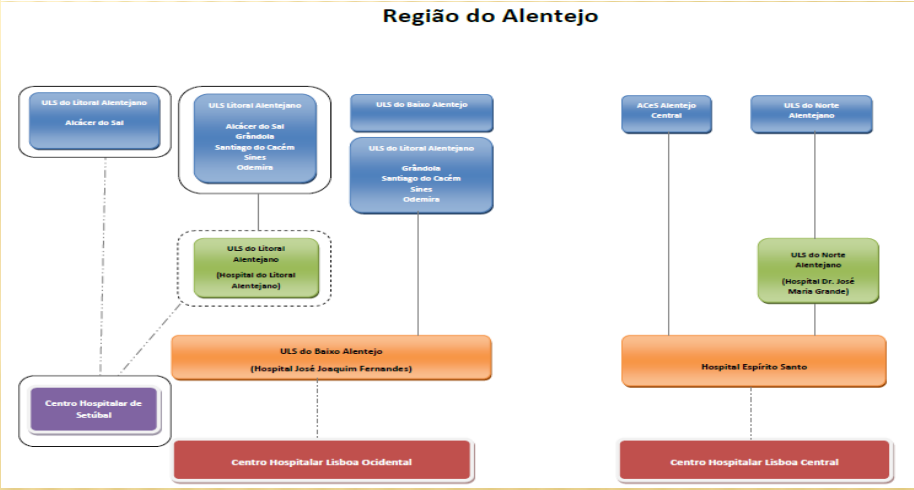


Figure 2. HIV infection: A single factor among many potential socioecologic disparities.

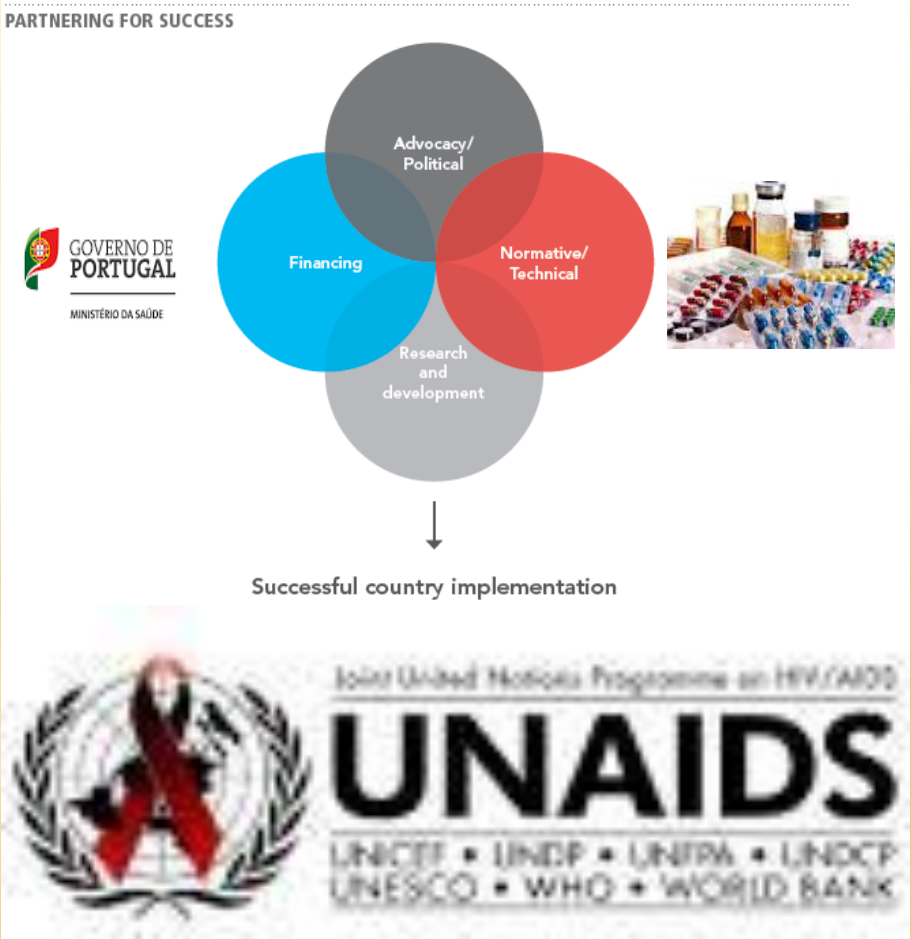
… ATRAVÉS DA DESCENTRALIZAÇÃO DE ALGUNS CUIDADOS DE AMBULATÓRIO…





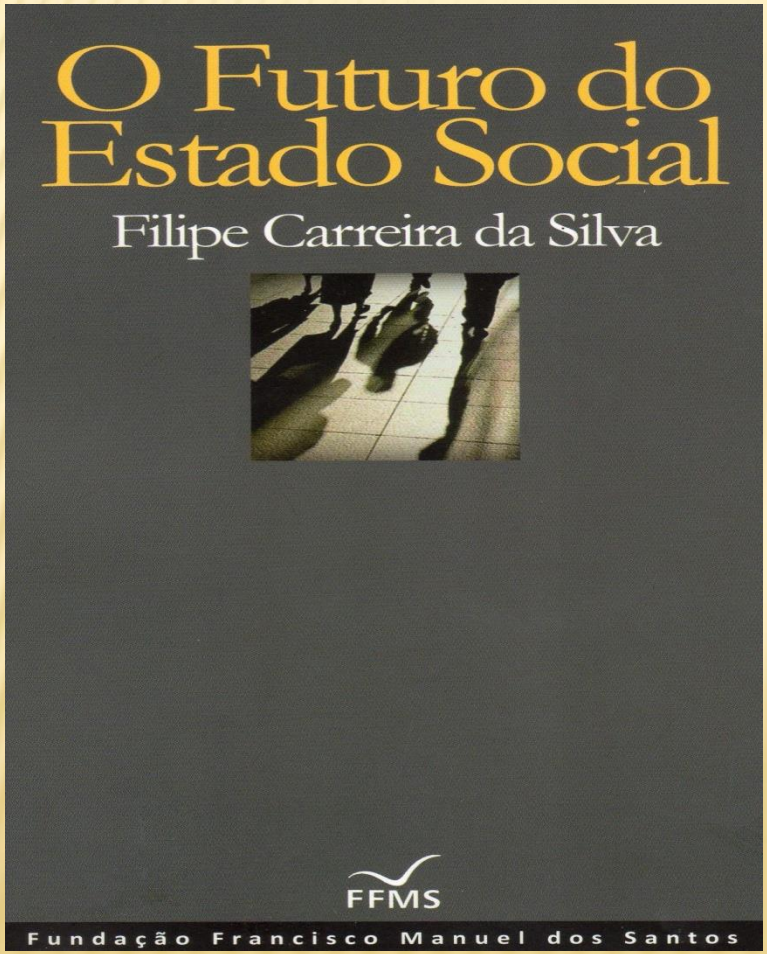
… (RE)AFIRMANDO QUE A SUSTENTABILIDADE PASSA CERTAMENTE POR IMPLEMENTAR ESTAS MEDIDAS!!!

- <u>Propostas</u>
  - 1)- Compra centralizada dos Medicamentos
  - 2)- Preço de referência igual p/ fármacos do mesmo grupo farmacológico e geração
  - 3)- Preço das co-formulações idêntico ao da soma dos seus componentes (incluindo genéricos) acrescido de um coeficiente justo (10%?) a ser negociado entre MS e IF
  - 4)- Estabelecimento de um nº máximo de doentes a serem tratados anualmente para as patologias que utilizem fármacos inovadores c/ impacto económico significativo (acima desse valor a IF suportaria os custos)
  - 5)- O pagamento ao Hospital prestador deverá acompanhar o doente (e a doença) permitindo assim a livre escolha por parte do doente sem mais constrangimentos
  - 7)- Informatização adequada do PC e avaliação periódica de resultados



UMA DERRADEIRA E INQUIETANTE INTERPELAÇÃO

- *“Se a vida não tem preço, nós comportamo-nos sempre como se alguma coisa ultrapassasse, em valor, a vida humana... Mas o quê?”* (Antoine de Saint-Exupéry)

PARA QUE ESTAS IMAGENS NÃO TENHAM QUE VOLTAR A REFLETIR A REALIDADE

TESE: O ESTADO SOCIAL SÓ NÃO ACABA PORQUE VIVEMOS EM DEMOCRACIA E NENHUM POLÍTICO GANHARIA ELEIÇÕES SE PROPUSESSE ABERTAMENTE A SUA EXTINÇÃO