

Dr Paul Cornes Disclosures March 2016

- Salary received:
 - United Kingdom National Health Service
 - Honoraria received:
 - Accord Healthcare
 - Amgen
 - · Bernstein
 - British Medical Journal
 - European Generics Association
 - Hospira
 - Janssen
 - Lilly
 - Merck Serono
 - Napp
 - Pharmaceutical Association of Malaysia
 - Pfizer
 - Roche
 - Sandoz
 - Teva

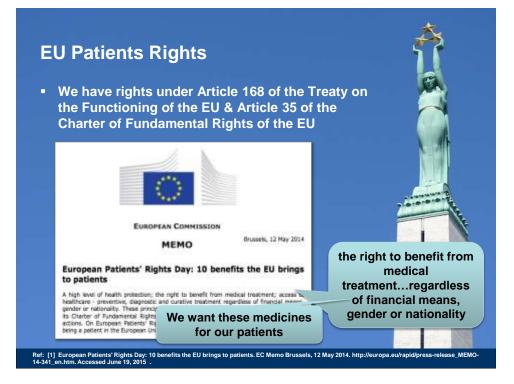
These slides and their content were created by Dr Paul Cornes.

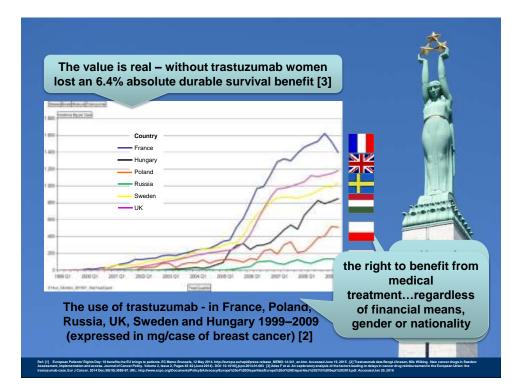
Please let me know if there are errors or omissions

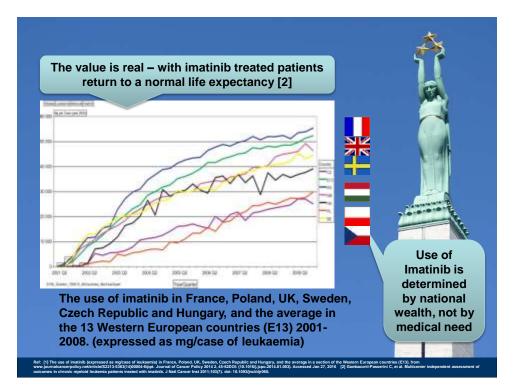


New targeted precision medicines are transforming cancer care

REVIEWS	Cancer Disease	Old Model	Old Survival	Personalized Model	Personalized Surviva
Targeted therapy in some cancersintraffing the orgonis		1000000000		A STATISTICS AND A STATISTICS	
An American State of American Constraints of American American State of American Constraints of American American State State of American Constraints of American American State State of American State of American State of American State of American State of Americ	Acute promyelocytic leukemia	Chemotherapy	19 months	All-trans refinoic acid	>58 months
	Chronic myeloid leukemia	Chemotherapy	6 years	Imatinib	>22 years
Chemotherapy era vs.	Melanoma	Dacarbazine	<10 manths	Vemurafenib	16 months
targeted medicines era	Medulary thyroid cancer	Chemotherapy	36 months	Vandetanib	Not reached
Examples where survival has more than tripled	Gastrointestinal stromal tumour	Chemotherapy	12-18 months	Imatinib	Close to 5 years
	We want these medicines for our patients			Brentuximab vedotin	22.4 months

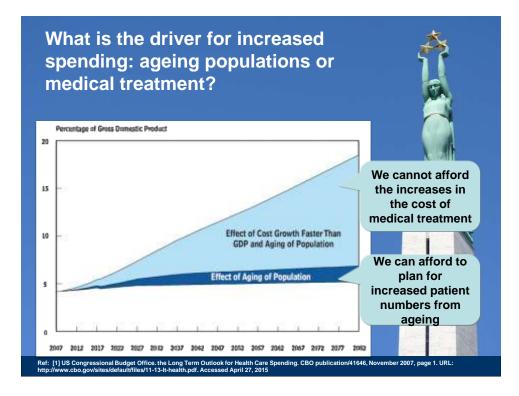






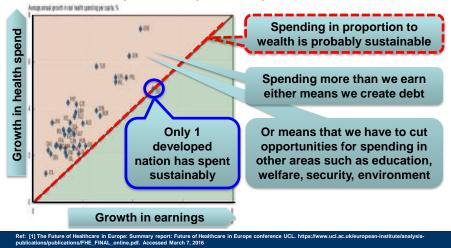


Ref: [1] Steven Brill. Bitter Pill: Why Medical Bills Are Killing Us. Time April 4, 2013 [2] Silverman E. Biotechnol Healthc. 2012;9(4):13-16.



Healthcare - is funding sustainable?

 The growth in health expenditure has exceeded earnings in all but one developed nation (2000-2008)

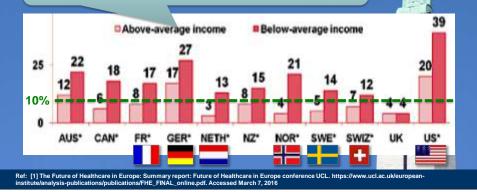






 Many patients did not fill or skipped a prescription, did not visit doctor with medical problem, or did not get recommended care.

Many Europeans may be surprised to see rich nations where >10% of those on below average income fail in 1 or more tests of access to healthcare

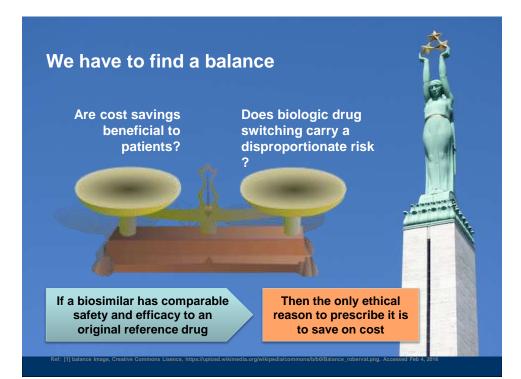




Economics and Ethics are inextricably linked in this topic



Ref: [1] argur Clinical Pharr d from Duerden MG, Hughes DA. Generic and therapeutic su 0;70(3):335-341. doi:10.1111/j.1365-2125.2010.03718.x. [2]





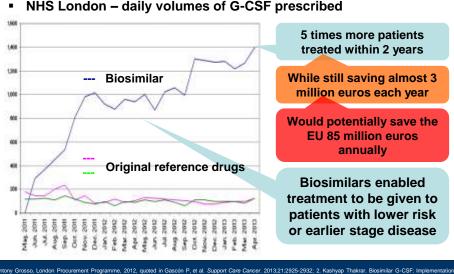
The Promise of biosimilar medicines

High cost biologics create a problem	Cost Savings from	That cheaper biologics could resolve		
Challenge	Biosimilars	Result		
Effective targeted therapy held back for later stage of disease	\rightarrow	Effective targeted therapy used earlier in the disease		
Treatment reserved for only the most severe cases	\longrightarrow	More patients have access to treatment		
Innovative therapies unaffordable	\longrightarrow	Biosimilars free up budget to buy innovative medicines		
Budgets for certain therapy areas are inadequate	\longrightarrow	Additional budget can be directed to areas of unmet need		
Ref: Adapted from Henry D, Taylor C. Pharmacoeconomics of Cancer Therapies: Considerations With the Introduction of Biosimilars. Seminars in Oncology. 2014:41, Supplement 3:S13–20				

Reality The Promise of biosimilar medicines

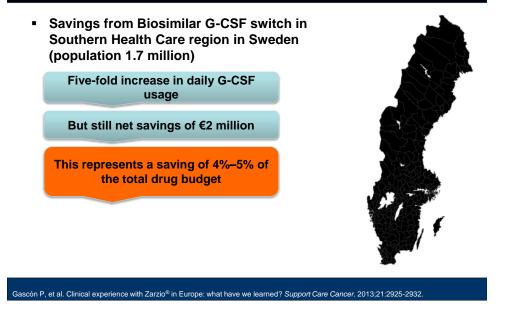
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The impact of biosimilar filgrastim in London

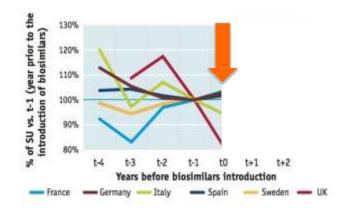


NHS London – daily volumes of G-CSF prescribed

The impact of biosimilar filgrastim in Sweden



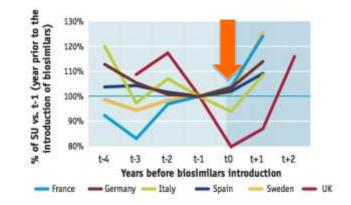
Biosimilars Bring Treatments into Reimbursement That Might Otherwise Be Unaffordable



 Trends in use of white cell growth factors – G-CSF before and after biosimilar introduction in the EU

IMS Health. Shaping the biosimilars opportunity: A global perspective on the evolving biosimilars landscape. December 2011. http://www.imshealth.com/ims/Global/Content/Home%20Page%20Content/IMS%20News/Biosimilars_Whitepaper.pdf.

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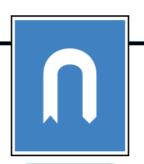
Biosimilars reverse negative funding decisions

- 2008 NICE Technology Appraisal Guidance No. 142
 - Epoetin alfa, epoetin beta and darbepoetin alfa are clinically effective for cancer treatment-induced anaemia
 - · But not cost-effective
- 2014 NICE Technology Appraisal Guidance No. 323

Erythropoiesis-stimulating agents (epoetin and darbepoetin) for treating anaemia in people with cancer having chemotherapy are clinically effective

tin alfa, epoetin beta and darbepoetin alfa for cancer treatment-ind

 And are now cost-effective at real contract prices

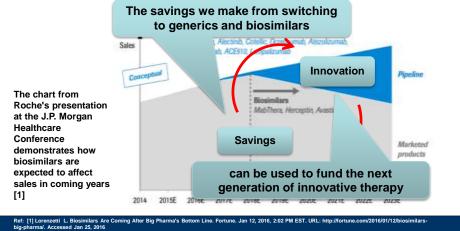


NICE accepted that biosimilar price competition had dramatically reduced the actual contract prices for epoetin

emia. http://www.nice.org.uk/guidance/ta142. Accessed 10 June 2015; emia in pennle with cancer baving chemotherapy (including review of TA142)

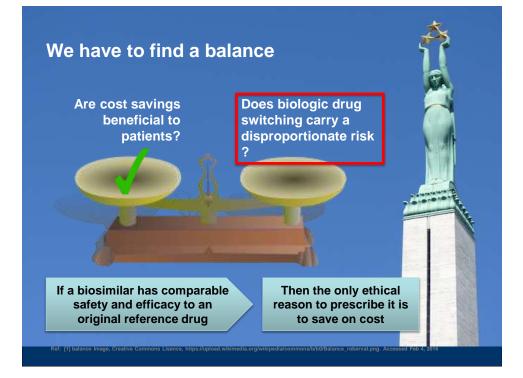
Biosimilar savings fund access to innovative therapy

 Roche has outlined its plan to adapt to biosimilars - using the savings to allow payers to reinvest in their next generation of innovation



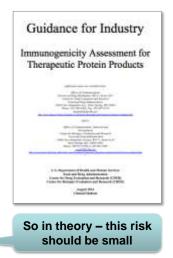
Reality The Promise of biosimilar medicines

	Cost Savings from	Payers need biosimilars to sustain healthcare		
Challenge	Biosimilars	Result		
Effective targeted therapy held back for later stage of disease	\rightarrow	Effective targeted therapy used earlier in the disease		
Treatment reserved for only the most severe cases	\longrightarrow	More patients have access to treatment		
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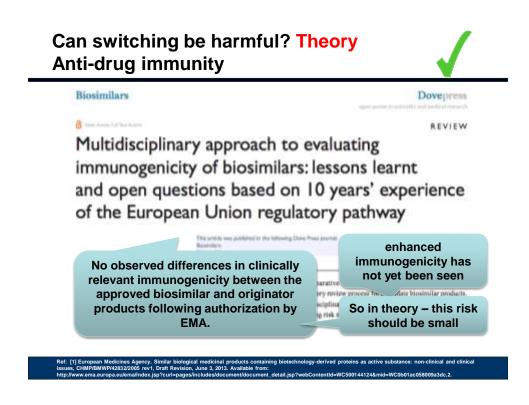


Can switching be harmful? Theory

- For switching to be a problem there would have to be a "carry over" effect from one drug to another
 - The only <u>mechanism</u> that we can imagine causing this would be immunogenicity leading to anti-drug antibody formation
- For switching to be a problem, the two drugs would need to have a different immune profile
 - For this reason, regulators set strict guidance on immunogenicity before a biologic can be approved [2]



Ref: [1] Yanai H et al. Levels of drug and antidrug antibodies are associated with outcome of interventions after loss of response to infliximab or adalimumab. Di Gastroenterol Hepatol. 2015 Mar;13(3):522-530.e2. doi: 10.1016/j.cgh.2014.07.029. Epub 2014 Jul 25. [2]Guidance for Industry Immunogenicity Assessment for Thorapautic Poteine Products. US. Department of Health and Human Services. Food and Druc Administration. Center for Druc Evaluation and Research (CDER).



Can switching be harmful? Practice

- In practice, with 10 years of experience of biosimilars in Europe, no problems have been identified.
 - Over that time, patient exposure to biosimilars has been measured in millions



Review of all published data on switching between originator and biosimilar

12,039 patients in 58 clinical trials 193 Post Authorisation Adverse event reports from EU DRA Vigilance

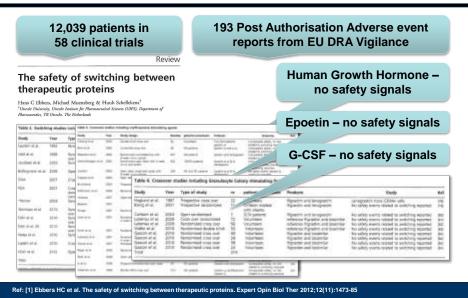
Review

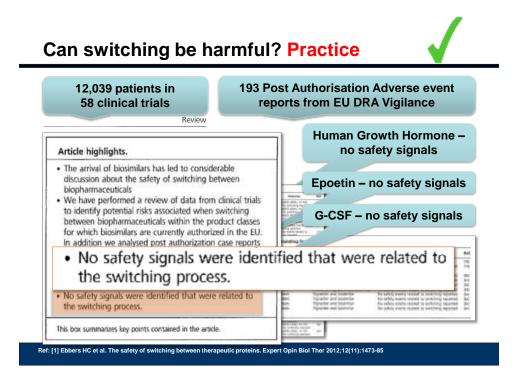
The safety of switching between therapeutic proteins

Hans C Ebbers, Michael Muenzberg & Huub Schellekens⁷ [†]Utrecht University, Utrecht Institute for Pharmaceutical Sciences (UIPS), Department of Pharmaceutics, TB Utrecht, The Netherlands

Ebbers HC et al. The safety of switching between therapeutic proteins. Expert Opin Biol Ther 2012;12(11):1473-85

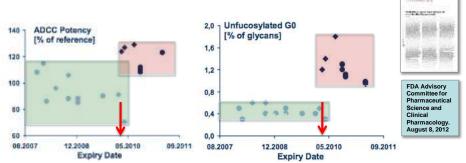
Review of all published data on switching between originator and biosimilar





Can switching be harmful? **Proportionality**

- Manufacturing changes in reference drugs [1]
 - Introduce differences between 2 versions of that drug that are sometimes greater than to a biosimilar [2]



Ref: [1] Schiesti, M. et al., Nature Biotechnology 2011;29:310-312 [2] McCamish M. FDA ACPS-CP update on biosimilars. FDA. http://www.ida.gov/downloads/AdvisoryCommittees/Committees/MeetingMaterials/Drugs/AdvisoryCommitteeforPharmaceuticalScienceandClinicalPharmacology/UC M315764.pdf. Accessed Jan 27, 2016

Can switching be harmful? Proportionality

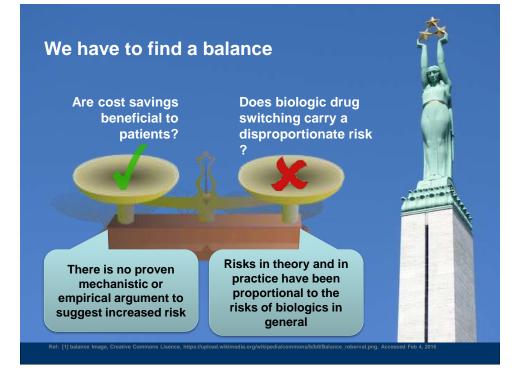


Is any potential risk in proportion to risks we accept already ?

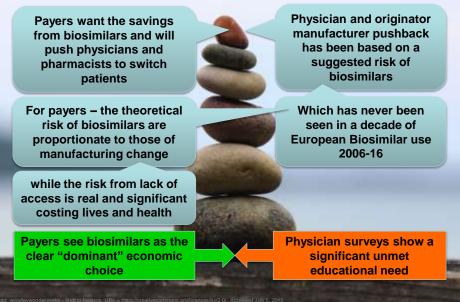
Can switching be harmful? Proportionality

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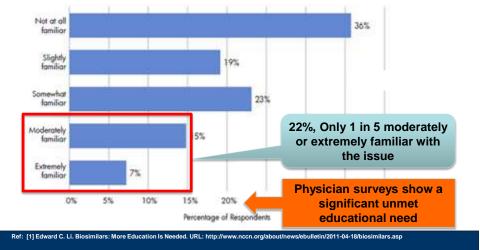
In assessing the balance between the risks and benefits of biosimilars



Physicians' knowledge of biosimilars remains insufficient:



 USA NCCN conference Respondents were asked to rate their overall familiarity with developments for biosimilars (n = 277)



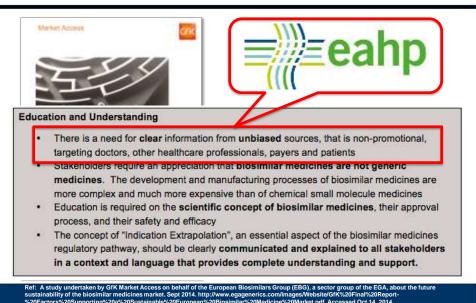
Physicians' knowledge of biosimilars remains insufficient:



- In a survey of 470 European prescribers
 - France, Germany, Italy, Spain and UK

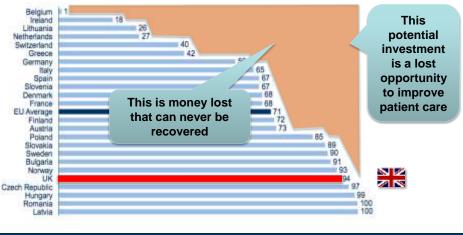
a quarter of participants cannot define or have not heard about biosimilars before.
Only 22% consider themselves as very familiar with them
Bloomberg w http://www.bloomberg.com/news/2014-03-18/a-quarter-of-doctors-in-urope-can-t-define-biosimilars.html
A Quarter of Doctors in Europe Can't Define Biosimilars
Physician surveys show a significant unmet educational need

Requirements for a sustainable biosimilar market in the EU



Requirements for a sustainable biosimilar market in the EU = *Education*

 % of G-CSF as biosimilars vs Neupogen in Europe, 5 years after biosimilars were approved



IMS MIDAS, Feb 2013, quoted in - Walsh K. Biosimilars' utilization and the role payers do play in driving uptake in Europe: an industry perspective. Biosimilar Medicines 11th EGA International Symposium, April 2013. Accessed 5 March 2014.

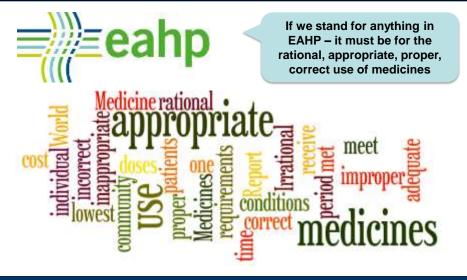
We are given clear leadership on Rational Medicine Use



- "Medicine use is rational (appropriate, proper, correct) when
 - · patients receive the appropriate medicines,
 - in doses that meet their own individual requirements,
 - · for an adequate period of time, and
 - at the lowest cost both to them and the community.
- Irrational (inappropriate, improper, incorrect) use of medicines
 - · is when one or more of these conditions are not met."
 - (WHO World Medicines Report, 2011).

Ref: WHO World Medicines Report, 2011 .

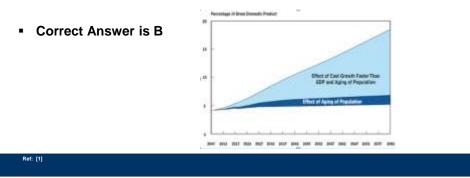
Leadership on Rational Medicine Use





- 1. Which is correct The rising cost of medical care is caused...
- A. mainly by the ageing of the population
- B. mainly by the increasing costs of new treatments
- C. equally shared between the ageing of the population and by the increasing costs of new treatments

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3 key questions - Is our present system economically sustainable?: Q2

- 2. Biosimiar drugs have ...
- A. proven to increase access to treatment
- B. enabled treatment to be given to patients with lower risk or earlier stage disease
- C. both a and b
- D. neither of a or b

2. Biosimiar drugs have ... A. proven to increase access to treatment B. enabled treatment to be given to patients with lower risk or earlier stage disease Cost C. both a and b Savings from D. neither of a or b **Biosimilars** Challenge Result Effective targeted therapy Effective targeted therapy held back for later stage used earlier in the diseat of disease More patients have Treatment reserved for Correct Answer is C access to treatment only the most severe cases Innovative therapies Biosimilars free up budget unaffordable to buy innovative m **Budgets for certain** Additional budget can be directed to areas of unmet therapy areas are inadequate need Ref: [1]

3 key questions - Is our present system economically sustainable?: Q3

- 3. The risks of switching to Biosimilar Medicines are greater than the risks from lack of access to targeted biologic drugs
- A. Strongly agree
- B. Agree
- C. Neither agree nor disagree
- D. Disagree
- E. Strongly disagree

- 3. The risks of switching to Biosimilar Medicines are greater than the risks from lack of access to targeted biologic drugs
- A. Strongly agree
- B. Agree

Ref: [1]

- C. Neither agree nor disagree
- D. Disagree
- E. Strongly disagree

E. To date this is the correct answer – no significant risks have been seen with our current established EMA approved biosimilar drugs and European switching practice







Supported by an educational grant from Roche

"Interchangeability of biologicals in the EU [—] the science, practice, ethics and cost side?⁽

ACPE programme number: 0475-0008-16-004-1.04-P /Contact house 1.5, CEUe: .15. A knowledge based activity

QUESTIONS & COMMENTS