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Wikipedia and medicines: Who edits medicine articles on the English Wikipedia

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Introduction

The medical profession and researchers in biomedicine are divided on the usability of Wikipedia for health information

Nevertheless, Wikipedia is widely used for looking up health information

Can we trust the information, or is it written by the pharmaceutical industry to promote their products?

Aim of study

To examine who edits Wikipedia articles on medicinal drugs

Is there evidence of industry involvement in the editing of the selected articles?

Selection of articles

- The **top ten selling medicines worldwide** were selected based on a report from EvaluatePharma in March 2014
- The **ten newest medicines (substances)** approved in Europe were found in the minutes from the Committee for Medicinal Products for Human Use (CHMP) at the European Medicines Agency in November and December 2014.

How to detect industry involvement?

- IP:
 - Check using whois tools online
- Users:
 - Check edit history and user page


For top 10 medicines only first edit as well as largest additions and deletions were checked

For new medicines all edits both IP and user were checked

Quality assessment of articles

- Assessments were retrieved from WikiProject Pharmacology, with one exception
 - Infliximab was rated only by Wikiproject Medicine

Results

- Descriptive results
 - Case description of industry involvement
 - Network analysis
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Top ten medicines

Drug substance name	First on Wikipedia	Quality	Views (last 30 days)	Watchers	Initial edit	Size (kB)	Industry edits detected
adalimumab	02.05.2005	Start	12052	51	IP	20,7	Yes
etanercept	17.06.2004	B	9058	59	Admin	14,2	No
infliximab	22.09.2003	B	11987	61	IP	25,8	No
salmeterol/fluticasone	21.07.2004	Start	6523	31	Auto	10,2	No
insuline glargine	10.04.2005	Start	5034	31	IP	12,2	No
rituximab	30.11.2004	C	17390	77	IP	22,2	No
bevacizumab	20.02.2005	B	12586	65	Auto	37,4	No
trastuzumab	23.04.2004	B	11366	53	Auto	32,8	No
rosuvastatin	05.05.2004	B	24320	59	Admin	24,4	No
aripiprazole	04.09.2003	B	23126	116	Auto	46,8	No

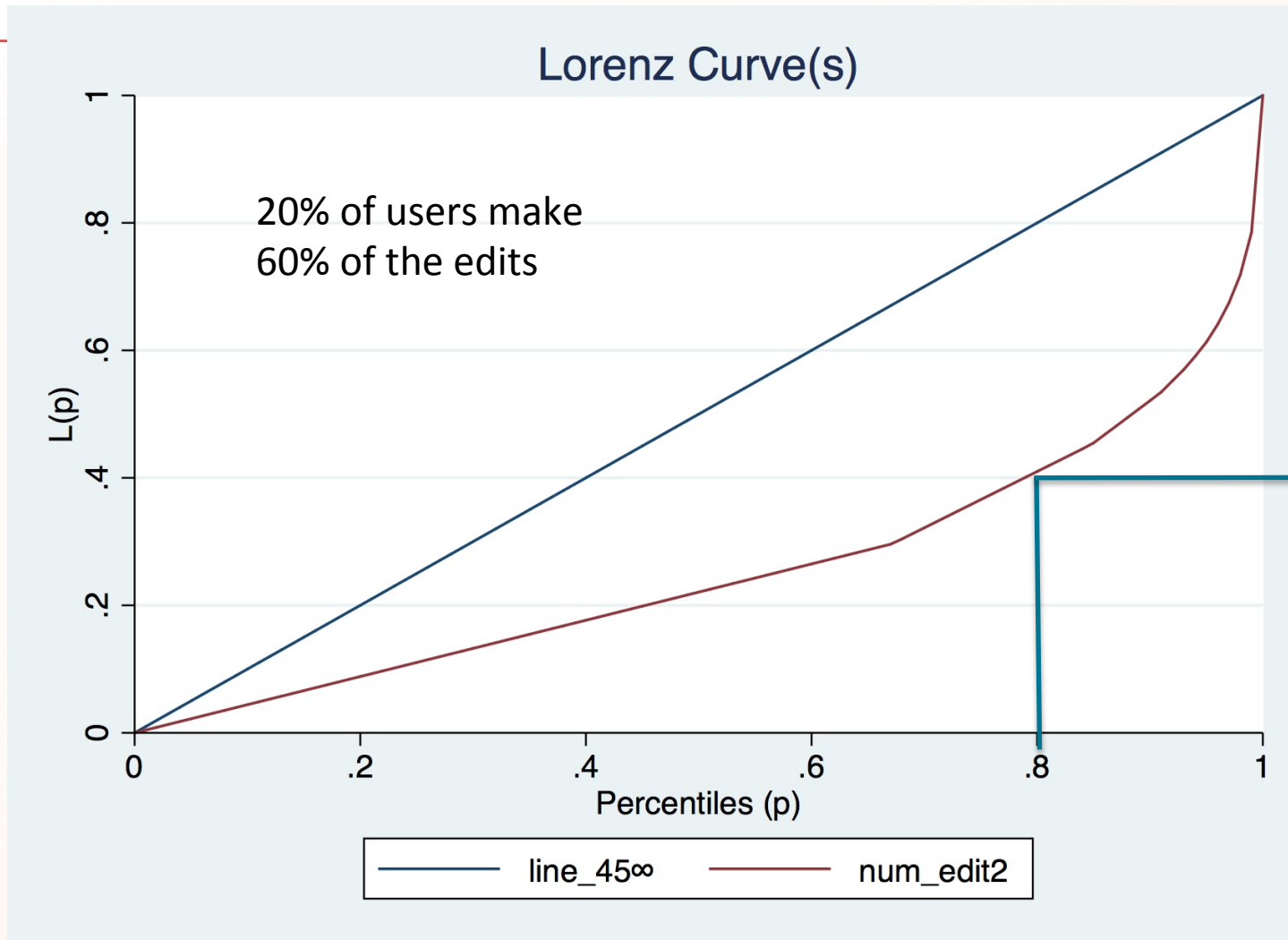
Ten newest medicines

Drug substance name	First on Wikipedia	Quality	Views (last 30 days)	Watchers	Initial edit	Size (kB)	Industry edits detected
saquinamide	18.08.2008	Start	1656	<30	Admin	6,2	No
dalbavancin	25.12.2007	Start	1725	<30	Auto	15,2	Possible
sevelamer	01.09.2005	Start	2964	<30	Auto	4,1	No
eliglustat	21.08.2014	Stub	566	<30	Auto	2,9	No
secukinumab	08.09.2011	Stub	2649	<30	Auto	4,8	Possible
dasabuvir	-	-	-	-	-	-	-
nintedanib	06.05.2011	Start	2966	<30	Reg. User	15,3	Likely
apremilast	06.09.2012	Start	2360	<30	Auto	6,4	No
ospemifene	28.02.2013	Start	1245	<30	Auto	13,2	Possible
vorapaxar	13.05.2008	C	1461	<30	Auto	10,9	No

Number of editors

	Top 10 medicines	New medicines
# edits	4185	438
# editors	1848	161
Edits/editor	2,3	2,7
Top 10 editor percentage	15,6%	31,5%

Who edits the articles?



Industry involvement

- Adalimumab: First edit done by IP from Abbot, parent company of the drug.
- Dalbavancin: Largest edit (over 7kb added) done by user with only one edit
- Nintedanib: Initial edit done by editor with few edits and a **very** specific knowledge of drugs from one company

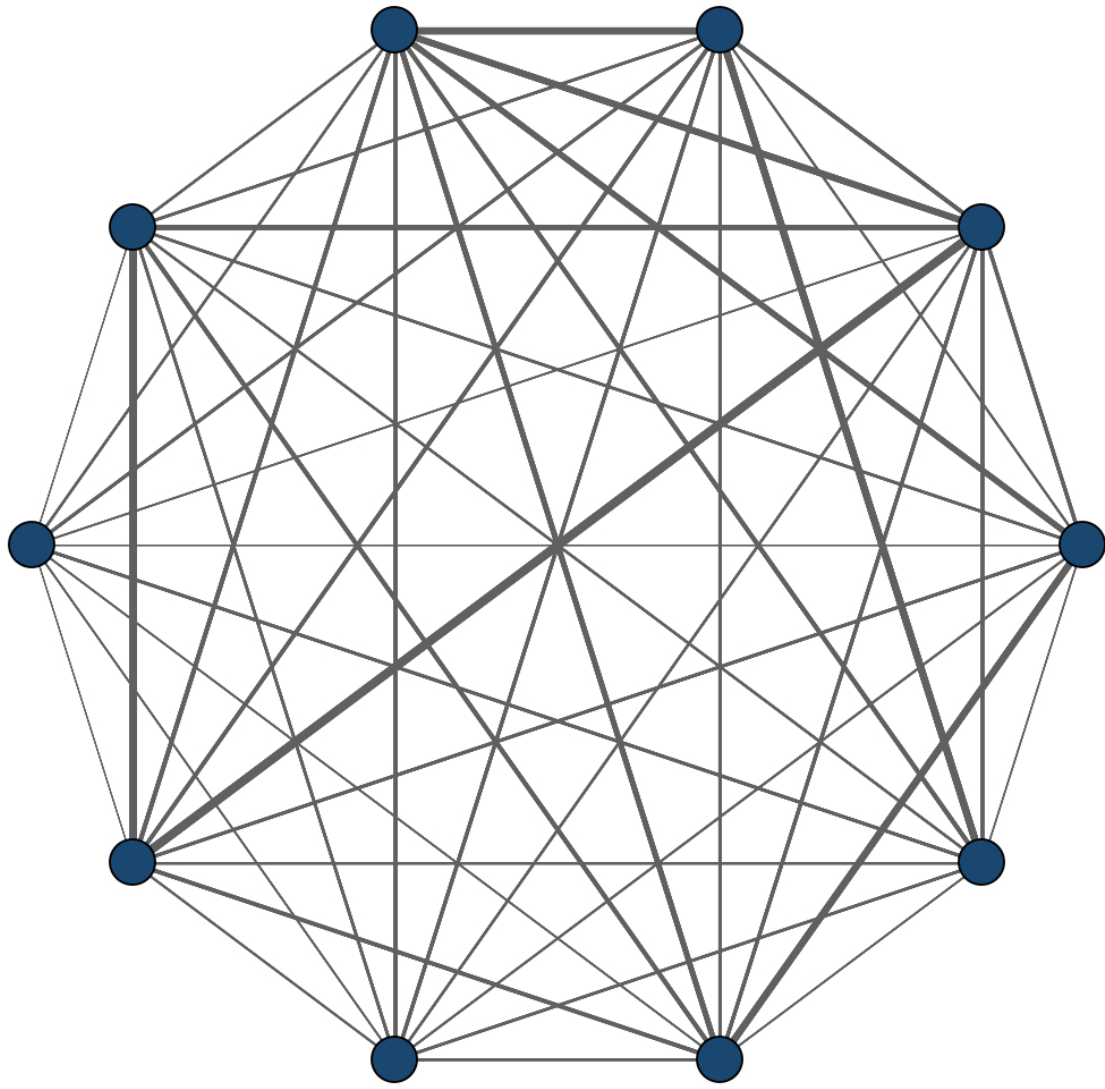
Possible industry involvement

- Secukinumab: Editor with few edits and deep knowledge of the authorisation status at the time.
- Ospemifene: Largest edit done by editor with edits only for this drug.

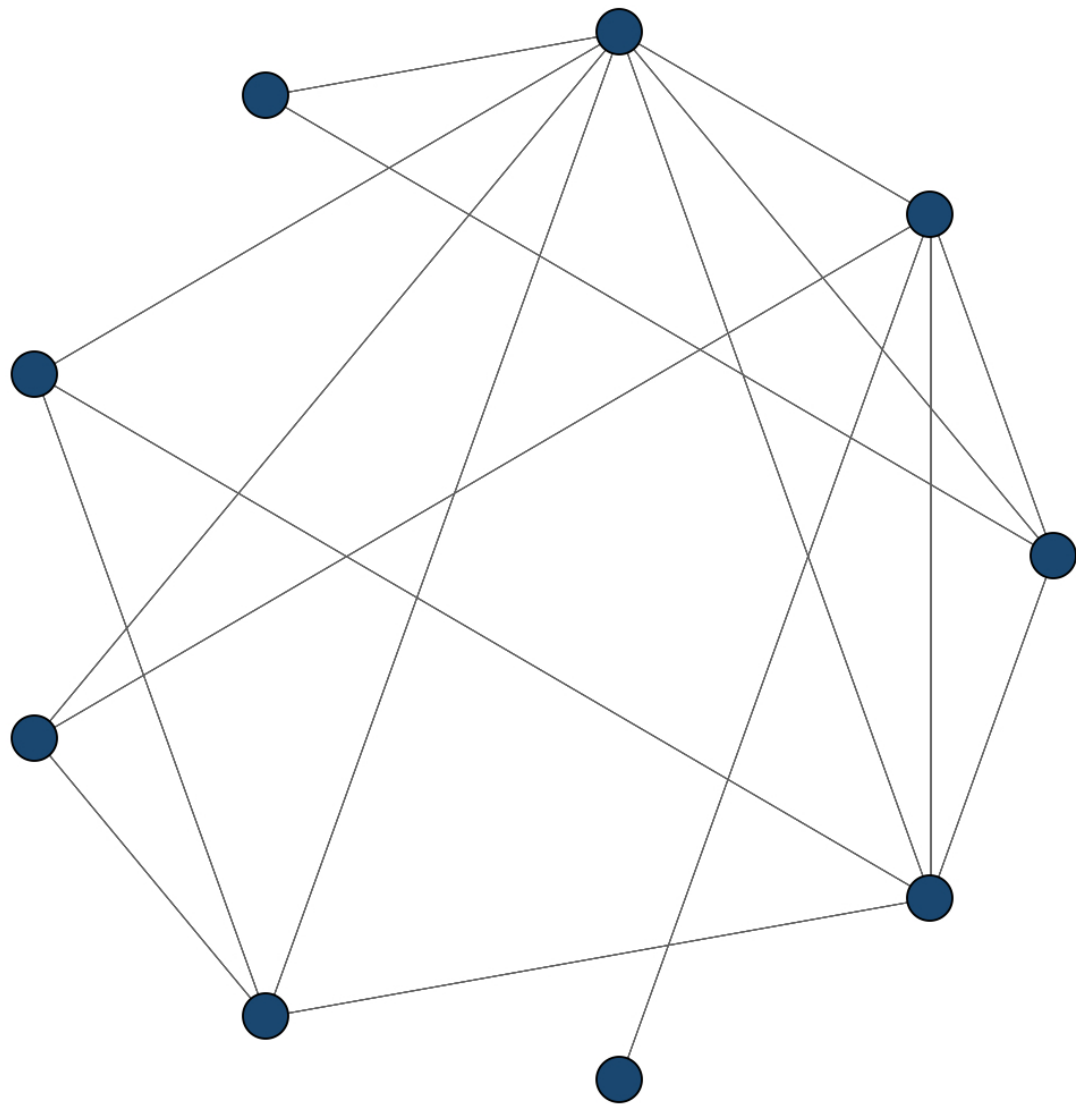
None of the editors declared a conflict of interest!

Network analysis

- A number of editors edit many medicine articles
 - A strong network will indicate that there are many active editors working on the articles
- Preliminary check of the network between the top 10 medicines and the newest medicines
- Also checking the resilience of the network by removing the top 10 and 20 editors measured by number of edits in total



— all = 0 — all = 24



———— all = 0 ————— all = 3

Summary

- Information about medicines on Wikipedia is largely written by experienced Wikipedians
- The pharmaceutical industry seems to edit articles on new drugs but these edits appear to be constructive
- In the cases we have found, industry **does not** declare conflicts of interest

Future work

- Expand selection of medicine articles
 - Possible master thesis?
- Further analyses of editors needed
- Time dependent analysis needed
- Network analysis of last 12 months of edits

- Automated quality assessment of edits (use of references etc.)
 - Interprofessional cooperation?

Thank you for your
attention

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