



University of Southern Denmark

Time for integrating clinical, lifestyle and molecular data to predict drug responses

Authors' reply

Pottegård, Anton; Friis, Søren; Christensen, René dePont; Habel, Laurel A; Gagne, Joshua J; Hallas, Jesper

Published in:
EBioMedicine

DOI:
10.1016/j.ebiom.2016.03.019

Publication date:
2016

Document version:
Final published version

Document license:
CC BY-NC-ND

Citation for pulished version (APA):

Pottegård, A., Friis, S., Christensen, R. D., Habel, L. A., Gagne, J. J., & Hallas, J. (2016). Time for integrating clinical, lifestyle and molecular data to predict drug responses: Authors' reply. *EBioMedicine*, 7, 11. <https://doi.org/10.1016/j.ebiom.2016.03.019>

Go to publication entry in University of Southern Denmark's Research Portal

Terms of use

This work is brought to you by the University of Southern Denmark.
Unless otherwise specified it has been shared according to the terms for self-archiving.
If no other license is stated, these terms apply:

- You may download this work for personal use only.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying this open access version

If you believe that this document breaches copyright please contact us providing details and we will investigate your claim.
Please direct all enquiries to puresupport@bib.sdu.dk



Commentary

Time for integrating clinical, lifestyle and molecular data to predict drug responses – Authors' reply



Anton Pottegård^{a,*}, Søren Friis^b, René dePont Christensen^a, Laurel A. Habel^c, Joshua J. Gagne^d, Jesper Hallas^a

^a Clinical Pharmacology, Institute of Public Health, University of Southern Denmark, Odense, Denmark

^b Danish Cancer Society Research Center, Danish Cancer Society, Copenhagen Ø, Denmark

^c Division of Research, Kaiser Permanente Northern California, Oakland, CA, USA

^d Division of Pharmacoepidemiology and Pharmacoeconomics, Department of Medicine, Brigham and Women's Hospital and Harvard Medical School, Boston, MA, USA

ARTICLE INFO

Article history:

Received 11 March 2016

Accepted 11 March 2016

Available online 18 March 2016

Thank you for an excellent and comprehensive commentary (Patrignani and Dovizio, 2016) that highlights the findings of our paper (Pottegård et al., 2016) and provides suggestions for the road forward in pharmacoepidemiologic studies. While “individualized therapy” is somewhat beyond the scope of the current study, utilizing an epidemiological/population-based analysis, we fully agree that research integrating clinical, lifestyle, and molecular data is an important step forward for improving drug therapy. In our opinion, our approach targeting multiple drug-cancer associations and the applied analyses can be considered a first step towards such integrated studies. However, the challenge lies in identifying data sources that can provide drug, clinical, lifestyle and genetic data for a sufficiently large population. In the context of the present study (Pottegård et al., 2016), we used prescription drug data dating back to 1995 (Kildemoes et al., 2011). Long-term data are necessary in the study of outcomes with long latency such as cancer (Umar et al., 2012). Importantly, the case might be different for acute events, such as bleeding or cardiovascular events. We believe that advances in the study of cancer risk associated with prescription drug use will require innovative methods that make use of detailed data on a subset of a population in ways that leverage the information for the analysis of the full population. One example in pharmacoepidemiology is propensity score calibration (Stürmer et al.,

2007), which allows adjustment of confounding based on data that is only available for a subset of the study population, e.g. survey data of life-style factors. Another example is recursive partitioning (Seeger et al., 2006), which can be used to refine study variables (e.g., confounders or outcomes) in a subset of the population that can then be applied to the entire study population.

Declaration of interests

AP is funded by the Danish Council for Independent Research (grant 4004-00234B). LAH is funded by a grant from the National Cancer Institute (R01 CA098838). LAH also reports grants from Takeda, grants from Sanofi, and grants from Genentech, outside the submitted work. The remaining authors declare no conflicts of interest.

References

- Kildemoes, H.W., Sørensen, H.T., Hallas, J., 2011. The Danish National Prescription Registry. *Scand. J. Public Health* 39, 38–41.
- Patrignani, P., Dovizio, M., 2016. Time for integrating clinical, lifestyle and molecular data to predict drug responses. *EBioMedicine* 7, 9–10.
- Pottegård, A., Friis, S., Christensen, R.D., Habel, L.A., Gagne, J.J., Hallas, J., 2016. Identification of associations between prescribed medications and cancer: A nationwide screening study. *EBioMedicine* 7, 73–79.
- Seeger, J.D., West, W.A., Fife, D., Noel, G.J., Johnson, L.N., Walker, A.M., 2006. Achilles tendon rupture and its association with fluoroquinolone antibiotics and other potential risk factors in a managed care population. *Pharmacoepidemiol. Drug Saf.* 15, 784–792.
- Stürmer, T., Glynn, R.J., Rothman, K.J., Avorn, J., Schneeweiss, S., 2007. Adjustments for unmeasured confounders in pharmacoepidemiologic database studies using external information. *Med. Care* 45, S158–S165.
- Umar, A., Dunn, B.K., Greenwald, P., 2012. Future directions in cancer prevention. *Nat. Rev. Cancer* 12, 835–848.

DOIs of original article: <http://dx.doi.org/10.1016/j.ebiom.2016.03.018>, <http://dx.doi.org/10.1016/j.ebiom.2016.03.031>.

* Corresponding author at: Clinical Pharmacology, University of Southern Denmark, JB Winsløvsvej 19, 2, DK-5000 Odense C, Denmark.

E-mail address: apottegaard@health.sdu.dk (A. Pottegård).

<http://dx.doi.org/10.1016/j.ebiom.2016.03.019>

2352-3964/© 2016 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).