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Article type : Research Letter

## **Are vitiligo treatments cost-effective? A systematic review.**

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Funding: No funding was received for the writing of this research letter.

Conflicts of interest: Nick Levell is President of the British Association of Dermatologists. The authors report no other conflicts of interest.

What is already known about this topic:

- There is currently no review of the economic evidence within vitiligo.

What does this study add?

- This study highlights the lack of economic evidence within vitiligo, particularly surrounding the cost-effectiveness of currently prescribed treatments.
- It is important that this research paucity is addressed.

Vitiligo is characterised by well demarcated, cutaneous, macular depigmentation, with worldwide prevalence estimated to be between 0.2-1.8% [1]. Vitiligo treatments aim to encourage re-pigmentation and include topical corticosteroids, calcineurin inhibitors and NB-UVB phototherapy. Camouflage can also be prescribed to help mask the appearance of vitiligo, although this is frequently only prescribed for the face.

It is important that decisions about how to spend limited healthcare funds are based on both the best clinical and economic evidence available. Often this is achieved by conducting an economic evaluation, a systematic process which aims to compare alternative courses of action in terms of their costs and benefits. Such analyses inform decisions by national bodies such as the UK National Institute for Health and Care Excellence.

This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as doi: 10.1111/bjd.15881

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Whilst there has recently been a gathering momentum for clinical research in vitiligo, possibly initiated by the James Lind Alliance priority setting partnership [2], along with a Cochrane systematic review which highlighted the existing lack of quality clinical research [3], it is unclear how much economic evidence is available within this clinical area. To investigate, we conducted a systematic review which aimed to identify all economic evidence related to vitiligo, to assess the quality of such economic research and lastly to identify any existing research gaps to help inform future research priorities. The full details of this systematic review are available online via the PROSPERO International Prospective Register of Systematic Reviews database [4], including the full search strategy and data extraction processes, whilst the PRISMA diagram detailing the results of the search process can be seen in Figure 1.

This review identified only two published research papers with a primary economic objective within vitiligo [5, 6]. Radtke et al. [5] conducted a willingness-to-pay (WTP) survey of 3319 German vitiligo patients, receiving 1023 complete responses (a response rate of 30.8%). This involved questioning patients about how much they were willing to pay for a cure for their vitiligo. The WTP values reported can be considered to estimate the maximum potential for benefit should a cure be identified and indicates the personal burden of disease for a patient. Amongst the complete responses, 32.5% stated they would be willing to make a one-off investment of more than €5000 (the highest band offered) for a cure of their vitiligo (2006 price year). The second paper found, conducted by Bickers et al. [6], considered the economic burden of multiple skin conditions, including vitiligo, across the United States. Using routinely collected data, this study estimated that the annual direct cost of treating vitiligo, which included visits to clinicians, hospital appointments and prescriptions, was \$175,000,000 for the price year of 2004 (equivalent to £151,935,027.49, in 2016) [7].

Whilst these two papers do indicate both a great personal and health care provider cost associated with vitiligo, importantly they do not help to inform resource allocation decision making, given that neither paper considers both the costs and associated benefits of two or more treatment comparators. As no papers were identified that undertook full economic evaluations of vitiligo treatments, it is evident that treatment and prescribing guidelines are being developed in the absence of any economic evidence. This is in stark contrast to the number of full economic evaluations found within other dermatological conditions, for example, a total of 37 full economic evaluations were found in a recent systematic review within psoriasis [8], and highlights a great need for economic research in vitiligo.

The systematic review does not enable us to answer our title question; it shows that no evidence exists to support or refute the value for money afforded by vitiligo treatments from any perspective (health systems, employers or individuals). It is hoped that this letter will act as a reminder to clinicians when conducting clinical effectiveness research to consider incorporating an economic component within this work. Particularly, there is a need for full economic evaluations considering currently prescribed vitiligo treatments.

#### References:

- [1] Zhang, Y., Cai, Y., Shi, M., Jiang, S., Cui, S., Wu, Y., Gao, X.H. and Chen, H.D., 2016. The Prevalence of Vitiligo: A Meta-Analysis. *PLoS one*, 11(9), p.e0163806.
- [2] Eleftheriadou, V., Whitton, M.E., Gawkrödger, D.J., Batchelor, J., Corne, J., Lamb, B., Ersser, S., Ravenscroft, J. and Thomas, K.S., 2011. Future research into the treatment of vitiligo: where should our priorities lie? Results of the vitiligo priority setting partnership. *British Journal of Dermatology*, 164(3), pp.530-536.

[3] Whitton, M., Pinart, M., Batchelor, J.M., Leonardi-Bee, J., Gonzalez, U., Jiyad, Z., Eleftheriadou, V. and Ezzedine, K., 2016. Evidence-based management of vitiligo: summary of a Cochrane systematic review. *British Journal of Dermatology*, 174(5), pp.962-969.

[4] McManus, E., Sach, T., Levell, N., 2017. What economic evidence is available for the treatment of non-segmental vitiligo? A protocol for a systematic review. PROSPERO: International prospective register of systematic reviews. CRD42016036116. Available from: [http://www.crd.york.ac.uk/PROSPERO/display\\_record.asp?ID=CRD42016036116](http://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42016036116)

[5] Radtke, M.A., Schäfer, I., Gajur, A., Langenbruch, A. and Augustin, M., 2009. Willingness-to-pay and quality of life in patients with vitiligo. *British Journal of Dermatology*, 161(1), pp.134-139.

[6] Bickers, D.R., Lim, H.W., Margolis, D., Weinstock, M.A., Goodman, C., Faulkner, E., Gould, C., Gemmen, E. and Dall, T., 2006. The burden of skin diseases: 2004: A joint project of the American Academy of Dermatology Association and the Society for Investigative Dermatology. *Journal of the American Academy of Dermatology*, 55(3), pp.490-500.

[7] Shemilt, I., Thomas, J. and Morciano, M., 2010. A web-based tool for adjusting costs to a specific target currency and price year. *Evidence & Policy: A Journal of Research, Debate and Practice*, 6(1), pp.51-59.

[8] Hamilton, M.P., Ntais, D., Griffiths, C.E.M. and Davies, L.M., 2015. Psoriasis treatment and management—a systematic review of full economic evaluations. *British Journal of Dermatology*, 172(3), pp.574-583.



## PRISMA 2009 Flow Diagram:

Search conducted from database inception to 31<sup>st</sup> May 2016

Identification

Screening

Eligibility

Included

