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Letter to the Editor

Severe Scabies as an Epidemiological Indicator of Persistent Transmission

To the Editor,

Scabies is commonly described through the lens of infestation burden. Clinical severity, treatment outcomes, and recurrent disease are generally interpreted as consequences of the interaction between the mite, the host, and the prescribed therapy. Yet this perspective may overlook a fundamental epidemiological reality: *Sarcoptes scabiei* is not primarily a disease of individuals but of transmission networks.

This distinction becomes particularly important when considering recurrent disease. Reinfestation is usually treated as a therapeutic endpoint, a sign that treatment has failed or that exposure has resumed. From a population perspective, however, repeated infestation may instead represent evidence that transmission itself has remained uninterrupted.

In this context, the recent study by Hossain and colleagues is particularly thought-provoking [1]. The authors observed a clear gradient between reinfestation frequency and disease severity, with severe scabies becoming progressively more likely among individuals experiencing multiple reinfestation episodes [1]. At the same time, household infection, crowding, hygiene-related variables, and recurrent disease cluster around the same individuals [1].

These observations suggest an alternative interpretation. Severe scabies may not simply reflect a higher burden of mites. Rather, it may function as a clinical signal of persistent transmission.

From this perspective, reinfestation is not merely a recurrent clinical event. It is evidence that transmission has remained active despite treatment. The same factors associated with severe disease in the study by Hossain and colleagues, including household infection, crowding, and recurrent disease, may also be interpreted as indicators of sustained exposure within an ongoing transmission network [1].

Under this framework, severity acquires an additional meaning. Beyond describing the condition of an individual patient, it may provide information about the epidemiological environment in which that patient is embedded. Severe scabies therefore becomes not only a measure of disease burden but also a potential marker of transmission burden.

This distinction between *burden of infestation* and *burden of transmission* may have practical implications. Current surveillance systems primarily quantify cases, prevalence, and treatment outcomes. Yet, these indicators provide limited information regarding the persistence of transmission within households and communities. Reinfestation frequency may offer a complementary metric, capturing not merely whether scabies is present but whether transmission remains active despite therapeutic interventions.

Such a perspective is consistent with the growing recognition of scabies as a public health challenge requiring interventions beyond individual case management, including household-based and community-level

approaches [2–5]. It also suggests that recurrent disease should not automatically be interpreted as evidence of inadequate drug performance. Effective treatment may eradicate mites from an individual while leaving the surrounding transmission network largely unchanged.

Perhaps severe scabies should be viewed not only as a dermatological outcome but also as an epidemiological signal. If so, when clinicians encounter severe or recurrent scabies, they may be observing more than the consequences of infestation. They may be observing the clinical footprint of transmission that has not yet been interrupted.

Declaration of competing interest

The authors declare that they have no conflicts of interest relevant to this manuscript.

CRediT authorship contribution statement

Giancarlo Ceccarelli: Conceptualization, Data curation, Writing – original draft. **Francesco Branda:** Conceptualization, Data curation. **Fabio Scarpa:** Writing – review & editing. **Massimo Ciccozzi:** Writing – review & editing.

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References

- [1] Hossain MS, Nandi DC, Biswas PS, Islam R, Saha S, Islam MM. Factors associated with scabies severity and reinfection: a cross-sectional study during recent surges in the Chattogram Division, Bangladesh. *IJID Reg* 2026;19:100899. doi:10.1016/j.ijregi.2026.100899.
- [2] Hay RJ, Steer AC, Engelman D, Walton S. Scabies in the developing world—its prevalence, complications, and management. *Clin Microbiol Infect* 2012;18:313–23. doi:10.1111/j.1469-0691.2012.03798.x.
- [3] Engelman D, Yoshizumi J, Hay RJ, Osti M, Micali G, Norton S, et al. The 2020 international alliance for the control of scabies consensus criteria for the diagnosis of scabies. *Br J Dermatol* 2020;183:808–20. doi:10.1111/bjd.18943.
- [4] Ceccarelli G, Branda F, Scarpa F, Albanese M, d'Ettorre G, Giovanetti M, et al. Rethinking scabies in Europe: an ECDC prevention framework approach. *Travel Med Infect Dis* 2025;63:102786. doi:10.1016/j.tmaid.2024.102786.
- [5] Bernigaud C, Fischer K, Chosidow O. The management of scabies in the 21st century: past, advances and potentials. *Acta Derm Venereol* 2020;100:adv00112. doi:10.2340/00015555-3468.

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