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Brief Report

Comparison of two different scabies outbreaks in health care workers: An observational study in an Italian University Hospital

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Key Words:

Scabies outbreak
Nosocomial infection
Prevention protocol
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The reapplication of an ad hoc prevention protocol during a scabies outbreak at a University Hospital in 2024 resulted in a substantial reduction in scabies cases and limited the spread, compared to the previous outbreak in 2022. The protocol's effectiveness, demonstrated by lower prevalence and confined transmission, confirms its potential as a replicable model for the management of nosocomial scabies in health care settings, especially in the absence of standardized international guidelines.

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BACKGROUND

Scabies is a highly contagious endemic skin infestation caused by *Sarcoptes scabiei* var *hominis*, which can have serious implications to health care settings, due to its high transmission potential and often delayed diagnosis.¹ Nosocomial outbreaks represent a re-emerging occupational risk, particularly for health care workers (HCWs) exposed to undiagnosed scabies cases,² especially in the absence of standardized international guidelines for scabies management in health care settings.

In this context, a 2023 study by Sponselli et al³ described an ad hoc designated prevention protocol, developed by the Operative Unit (UO) of Occupational Medicine, that successfully managed a scabies outbreak in a large Italian University Hospital in the South of Italy. The aim of this study was to evaluate and compare the outcomes of the same protocol, reapplied at the onset of a new subsequent outbreak, in order to validate its reproducibility and effectiveness in containing the spread and reducing the duration of the outbreak among HCWs.

METHODS

A retrospective observational study was conducted at the same university hospital following the first case of scabies diagnosed in a

patient on October 11, 2024. The 2022 ad hoc protocol was reapplied without any structural change immediately at the onset of the outbreak³ (Fig. 1).

A structured risk assessment was performed to identify HCWs at increased risk of scabies. These HCWs were subjected to active surveillance and underwent a dermatological screening at the UO of Dermatology. As part of the epidemiological investigation, patients and HCWs were promptly informed in order to raise awareness and report the onset of symptoms to the UO of Occupational Medicine.

The therapeutic approach, as established in the 2022 protocol, differed from the current European guideline recommendations for the management of scabies. Topical permethrin 5% cream or benzyl benzoate 25% were adopted as first-line treatments. Permethrin was prescribed for 2 consecutive days, followed by a single reapplication after 1 week, whereas the guidelines recommended a single application for 8 to 12 hours, followed by a single reapplication after 1 or 2 weeks.⁴ Similarly, benzyl benzoate was used once daily for 3 consecutive days and repeated after 1 week, whereas the European guidelines recommend only 2 consecutive daily applications with reapplication on day 7.⁴ If skin lesions or itching persisted beyond this period, despite confirmed adherence and proper application of therapy, cases were considered refractory to therapy and were treated with oral ivermectin. This therapeutic protocol was defined by the UO of Dermatology on the basis of their clinical expertise and the favorable results previously achieved in outpatient practice. Massive drug administration was extended in wards with prevalence > 2%.

Work suspension criteria were more stringent than national and international recommendations, which suggest a 24-hour absence from work from the start of therapy.^{5,6} In our protocol, affected

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Ethics approval: All HCWs were informed that data would be treated in an anonymous and collective way, with scientific methods and for scientific purposes, according to the principles of the Declaration of Helsinki.

Conflicts of interest: None to report.

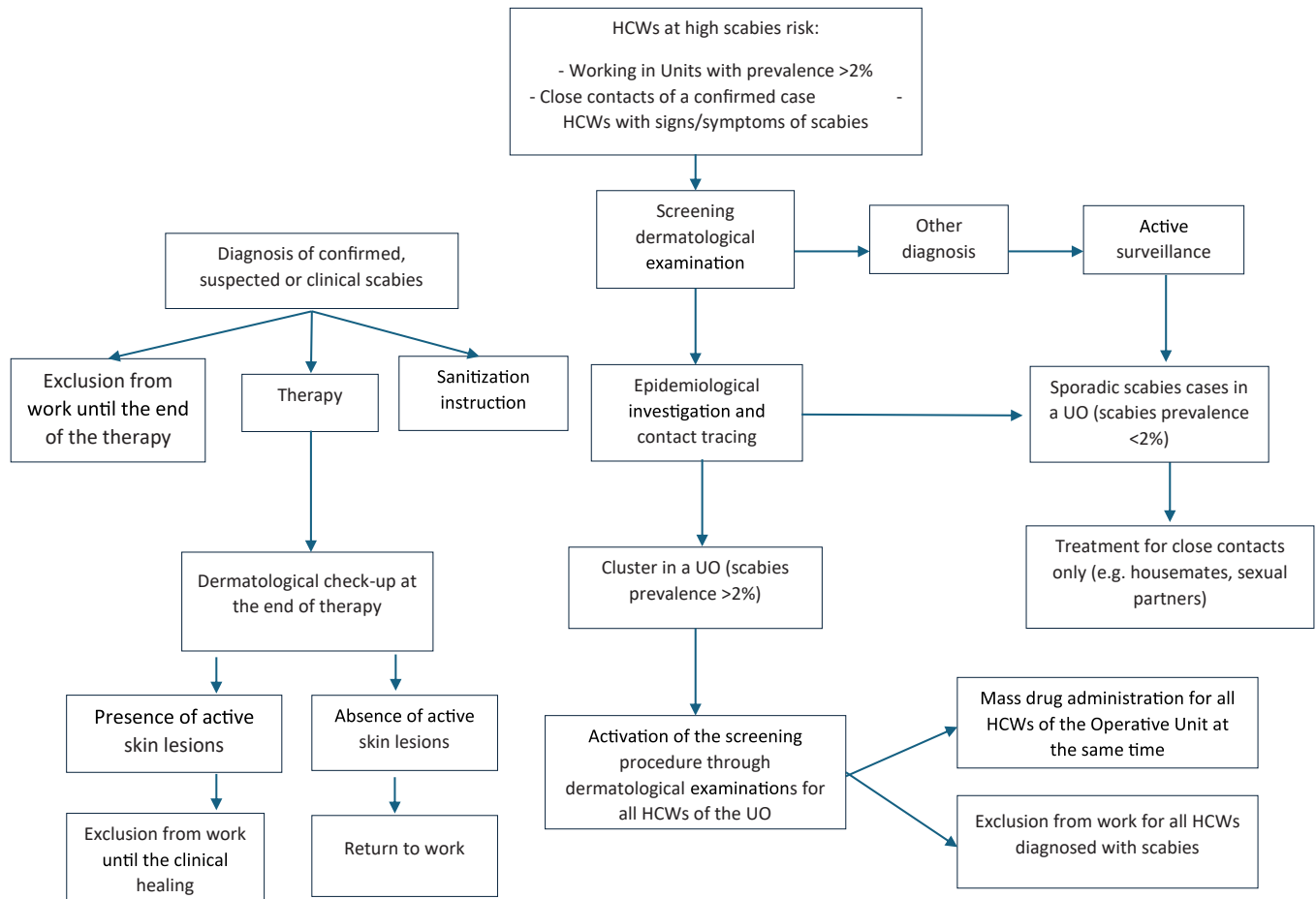


Fig. 1. Prevention protocol for the management of scabies hospital outbreak.

Table 1
Comparison of scabies outbreaks in 2022 and 2024

| | 2022 | 2024 |
|------------------------------|------|------|
| HCWs screened (n) | 183 | 65 |
| Confirmed cases (n) | 21 | 10 |
| Prevalence (%) | 0.35 | 0.17 |
| Operating units involved (n) | 8 | 1 |
| Nurses (%) | 33.3 | 50.0 |
| Dust mite allergy (%) | 19.0 | 20.0 |
| Duration (wk) | 14.7 | 5 |

HCWs, health care workers.

HCWs were suspended from work for the entire duration of treatment and readmitted only after a medical checkup at UOs of Dermatology and Occupational Medicine.

Ethical approval was not necessary because all medical examinations were performed according to Italian law on the protection of workers exposed to occupational risks (D.Lgs. 81/2008) and with the principles of the Declaration of Helsinki, with scientific methods and for scientific purposes.

RESULTS

A total of 65 HCWs underwent a screening dermatological examination, of whom 10 (15.4%) were diagnosed with confirmed scabies (level A, IACS).⁷ The mean age was 47.9 years, and the mean body mass index (BMI) was 26.16. Dust mite allergies had been reported in 2 cases (20.0%), and 5 cases (50.0%) were nurses. Compared

to the hospital's 6,000 HCWs overall, the prevalence of scabies in 2024 was 0.17%, limited to a single operating unit, and the outbreak lasted 5 weeks, ending on November 15, 2024 (the end of incubation period related to the last case detected), compared to 14.7 weeks in 2022.

In contrast, in the 2022 outbreak, 183 HCWs at high risk were screened and 21 (11.5%), across 8 UOs, were diagnosed with scabies.

Table 1 provides a comparative summary of the results from the 2022 and 2024 scabies outbreaks.

DISCUSSION

The 2024 outbreak showed a reduction in prevalence compared to the 2022 outbreak and was confined to a single UO (0.17% vs 0.35%).

The profile of infected HCWs was comparable to the 2022 findings (nurses and HCWs with dust mite allergies).^{3,8,9}

In contrast to the national and international recommendations, which suggest an exclusion of 24 hours post-treatment,^{5,6} the prevention protocol mandated treatment completion and clinical healing before return to work. The rationale was to implement stricter criteria than those recommended, considering the hospital's high-risk environment and the presence of vulnerable patients, in order to minimize the risk of infestation spread in the event that therapy-refractory or still-infectious cases resumed work after only 1 day of treatment. These differences, along with immediate risk stratification and focused massive drug administration, may have

been helpful in achieving a rapid containment of the outbreak and reducing the spread of infection into the community.

This approach is consistent with the latest strategies recommended by public health agencies for the management of institutional outbreaks, including recent guidelines from the UK Health Security Agency and the Centers for Disease Control and Prevention (CDC),^{6,10} which emphasize early diagnosis, enhanced dermatological surveillance, and coordinated pharmacological intervention.

Although the protocol used in 2024 was functionally equivalent to the one developed in 2022, 2 factors could explain its greater effectiveness. First, the protocol was already well-defined and immediately applicable at the beginning of the epidemic, reducing the delays related to its development, which had otherwise influenced the results of the previous study. In addition, the Dermatology Unit gained greater diagnostic awareness and clinical expertise in recognizing cases of scabies and was arguably more effective in identifying early manifestations of the disease than in 2022. These factors helped to reduce the number of HCWs infected and limit the overall spread of the disease, as evidenced by the involvement of a single operating unit and the shorter duration of the outbreak (5 vs 14.7 weeks).

Finally, the rapid containment of the epidemic and the limited number of cases in 2024 result in a better cost-benefit profile, with lower costs of treatment, suspension from work and other associated indirect costs.

CONCLUSIONS

The reapplication of the prevention protocol led to improved containment of a nosocomial scabies outbreak in 2024, with fewer cases and limited spread. These findings confirm the utility of our

protocol and support its adoption as a replicable model for the management of scabies in health care environments, especially in the absence of standardized international guidelines.

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