

## NOSOCOMIAL SCABIES OUTBREAKS IN ACUTE CARE FACILITIES LOS ANGELES COUNTY, 1996

### INTRODUCTION

In 1996, 13 outbreaks of scabies infestation were reported from acute care hospitals in Los Angeles County (LAC), more than five times in excess of the previous six-year average of 2.5 outbreaks per year. While the occurrence of scabies in long-term-care facilities is common, outbreaks in acute facilities occur sporadically and are usually associated with exposure to a patient with an atypical scabies presentation. Atypical scabies presentations may result when diagnosis and treatment are delayed and are more prevalent in institutionalized or debilitated patients, or those who are immunosuppressed from underlying disease or drug therapy. The following is a descriptive summary of the 13 hospital scabies outbreaks reported in 1996 and related scabies prevention activities.

### METHODS

A **nosocomial scabies** outbreak was defined as scabies infestation confirmed in two or more healthcare workers or patients within a six-week period for whom there were no known sources outside the hospital. A **source case** was defined as a patient with a positive skin scraping for scabies, or a clinical diagnosis of scabies made by a physician, epidemiologically linked to one or more infested employee or patient. An **employee case** was defined as any hospital staff member with a positive skin scraping for scabies, or a clinical diagnosis of scabies confirmed by employee health. A **patient case** was defined as any patient identified as potentially exposed to a source case with a positive skin scraping for scabies or symptoms of pruritus and rash. **Atypical noncrusted scabies** was defined as a severe scabies infestation with hundreds of mites characterized by noncrusted skin lesions which resemble other cutaneous conditions such as eczema, or drug reaction. **Crusted scabies** was defined as a highly contagious atypical presentation of scabies characterized by extensive hyperkeratotic skin lesions with formation of crusts and scales which are heavily imbedded with thousands of mites. **Days of potential exposure** was defined as the period of time six weeks prior to onset of source cases' symptoms or from time of admission if onset less than six weeks prior, until the date placed on contact precautions or until the last date of exposure to a symptomatic staff or patient case.

Outbreak files were reviewed and data extracted utilizing a standardized data extraction form. Study variables included information on the suspected index case, days of potential exposure, number and types of wards affected, duration of outbreak, secondary cases among staff and patients and transmission to their households or close contacts, prophylactic treatment of contacts, and results of post-discharge patient contact follow-up.

## RESULTS (Table 4)

**Source-case information.** A probable source case was identified in each of the 13 outbreaks. The median age was 75 years with a range of <13 years to 92 years. Two of the cases were characterized as atypical noncrusted scabies, 4 as typical (regular) scabies, and 7 as crusted scabies. Seven cases were initially misdiagnosed with other cutaneous conditions such as psoriasis, dry skin, urticaria due to drug allergy, exfoliative dermatitis, and fungal infection. Misdiagnosis resulted in an average delay of 19 days to diagnosis. Among the misdiagnosed were four of the five cases who expired shortly after their scabies diagnosis was made. Of those that expired, 2 had an underlying diagnosis of lupus erythematosus, 2 were in renal failure, and 1 expired from congestive heart failure associated with morbid obesity.

**Characteristics of outbreaks.** The mean number of days of potential exposure prior to case diagnosis was 26 days with a range of 5 to 51 days. The mean outbreak duration was 23.6 days with a range from 1 to 76 days. For those outbreaks where the source case presented with crusted or atypical noncrusted scabies, there was a positive correlation between duration of outbreak, days of potential exposure, and number of secondary cases. A mean of 2.4 wards were involved in the outbreaks; in the six outbreaks where ancillary staff were affected, an average of six different departments were affected including emergency, housekeeping, occupational and physical therapy, laboratory, radiology, and transportation.

**Hospital Staff and Patient Contacts.** A total of 242 staff and 119 patient cases were identified in the 13 outbreaks. The five outbreaks accounting for 87.2% (211/242) of the staff cases all involved ancillary and in some instances, nonpatient care staff. Based on interviews with staff cases involved in these larger outbreaks, staff cases with the earliest onset of symptoms were those who had direct contact with the source case or their immediate environment. Staff cases with later onsets were likely infested by contact with other healthcare workers or the ward environment as approximately two-thirds (69/119) of the case-patients developed symptoms after they were discharged. Three additional cases were identified in two staff households.

Post-discharge follow-up of approximately 3,000 patients from six of the outbreaks was conducted by district public health nurses. Patient case attack rates (ARs) were based on the number of cases identified among patient contacts located post-discharge. Approximately 70% (2,100/3,000) of these patients were located and the mean AR was 9.8% with ARs ranging from 0% to 30%. Outbreak #14 with a patient AR of 30% occurred in a facility that cared for patients requiring longer term care; this outbreak had the second longest potential exposure period (43 days) and the longest duration (76 days). Nine additional cases were identified in five case-patient households. Hospital staff denominator data were not uniformly available to calculate staff ARs.

In 11 of the 13 outbreaks, over 2,200 hospital staff and over 700 patients received prophylactic treatment for scabies. Data were not available in two outbreaks where staff and patients on three different wards received mass prophylactic treatment for scabies.

**Control Measures Taken by Hospitals.** The majority of the hospitals followed the revised

guideline for management of crusted scabies outbreaks. The revised guideline included more aggressive control measures such as:

- Report single cases of crusted scabies and report as an outbreak one or more nosocomially acquired staff and/or case-patient on a single ward.
- Broaden the definition of a contact to include all patients and staff (including those from ancillary departments) who were on the same area/ward as the source case prior to case isolation and environmental cleaning. Consider mass prophylactic treatment of all contacts and prophylactic treatment of all staff in affected ancillary departments.
- Advise physicians to consider multiple applications of the scabicide permethrin and of other scabicial agents if initial permethrin treatments fail; continue contact isolation for source case until negative scrapings are obtained from a minimum of three anatomic sites.
- Notify patient contacts discharged prior to receiving prophylactic treatment of the need for preventive treatment.

**Prevention Activities.** An updated guideline for control of crusted scabies in health-care facilities was published in the *Public Health Letter*, a newsletter distributed to 28,000 health-care professionals in Los Angeles County (LAC). This was followed by a mass mailing of the revised guideline to infection control (IC) staff in hospitals and to directors of nursing and administrators of long-term-care facilities in LAC. Scabies advisories were sent to hospital IC staff and dermatologists alerting them of the (1) increase in nosocomial scabies, (2) problem of misdiagnosed crusted scabies cases, and (3) recommendation that all patients with suspicious skin lesions be placed on contact precautions until evaluated by a dermatologist.

A community education forum on scabies held at a local hospital was attended by staff from acute care facilities, public health, and AIDS services organizations. Two additional inservice programs were provided to an infection control group and an AIDS service agency.

## CONCLUSION

The majority of reported nosocomial scabies outbreaks were associated with a probable or confirmed crusted or atypical noncrusted scabies case initially misdiagnosed as another cutaneous condition attributed to an underlying medical condition. Delayed diagnoses further contributed to the transmission of scabies to hospital staff and patients requiring extensive follow-up and prophylactic treatment of contacts. Healthcare providers should carefully assess patients' skin condition on admission and appropriately isolate patients with suspicious skin lesions until evaluated by a dermatologist.

**Table 4. Summary of Nosocomial Scabies Outbreaks in Acute-Care Facilities  
Los Angeles County, 1996**

OB#	Source Case					# Days of potential exposure	Duration of outbreak(days)	Hospital Staff		Patients (excluding source case)		
	Age	Scabies diagn.	Die d Y/N	Misdiag. If Y, initial dx	Underlying medical condition			# prophy. treated	# cases	# prophy. treated	# cases <sup>b</sup>	Attack Rate <sup>c</sup> Based on post-d/c follow-up
2	71	Crusted	N	Psoriasis	Hypoten.	25	26	1,291	43	329	35	2.1% (35/1667)
5	75	Atypical	Y	Psoriasis	Lupus	5	8	37	12	78	1	N/A
13	61	Crusted	Y	No	Obesity	51	41	151	33	1 ward	20	10.0% (20/200)
14	82	Crusted	N	No	ALS	43	76	144	7	123	38	30.0% <sup>d</sup> (7/30)
16	<13	Typical	N	No	Unknown	7	20	1 dept.	2	N/A	1	N/A
28	54	Crusted	Y	Dry skin	Lupus	24	18	378	63	378	7	8.1% (7/86)
36	92	Crusted	N	Urticaria	Pneumoni	24	1	3 wards	1	3 wards	8	8.3% (8/96)
45	85	Typical	N	No	Unknown	29	5	58	2	2	1	N/A
49	54	Atypical	Y	Exf. dermat	Renal	30	58	3 wards	24	3 wards	1	Unknown
51	39	Crusted	N	No	Renal	6	1	0	2	0	1	0.0% (0/22)
91	15	Typical	N	No	None	38	3	40	1	18	3	N/A
94	84	Crusted	Y	Psoriasis	Renal	13	13	35	48	15	0	Unknown
100	78	Typical	N	Fungus	CVA	43	37	92	4	22	3	Unknown

<sup>a</sup> Atypical noncrusted scabies.

<sup>b</sup> Majority of cases identified post-discharge.

<sup>c</sup> # of cases identified post-discharge/# patients located x100.

<sup>d</sup> Patients required longer term care than those in other facilities.