

CRUSTED SCABIES!

A Nosocomial Outbreak in Raid County, Bug-Away City, Illinois

A CASE STUDY IN ASSURANCE



by

THE MOODY BLUES

MARPHLI - YEAR 12

CRUSTED SCABIES!

A Nosocomial Outbreak in Raid County, Bug-Away City, Illinois

A CASE STUDY IN ASSURANCE

Case Introduction

From early March through early June, 2002, thirteen outbreaks of scabies¹ infestation were reported in Bug Away City, located in Raid County, Illinois. The outbreaks resulted in thousands of Raid County residents requiring surveillance and/or treatment services. Significant public and private resources had to be expended before the outbreaks abated. In 2002, Raid County's scabies infestation rate was more than five times the average rate of the previous six years (2.5 cases). Moreover, the thirteen aforementioned outbreaks were nosocomial² in origin.

Nosocomial infections represent a very serious, **though clearly avoidable**, public health problem.³ The term "nosocomial" comes from two Greek words: *nosus*, meaning "disease" and *komeion*, meaning to "take care of." Thus, "nosocomial" should mean any disease contracted by a patient while under medical care. Generally speaking, however, it has taken on a more restrictive connotation, and refers primarily to diseases contracted in hospitals. A common synonym for a "nosocomial infection" is a "hospital acquired infection." A common antonym for a "nosocomial infection" is a "community acquired infection."

The following case study⁴ traces a particular healthcare facility's response to one of Raid County's 2002 scabies outbreaks—specifically, a nosocomial "crusted scabies"⁵ outbreak that occurred at Richland Medical Center (RMC), located in Richland, an affluent suburb of Bug Away City. RMC is administrated by the following key personnel (in order of their appearance in the case study): Dr. Stich A. Lot (Director, RMC Emergency Department), Dr. I.M. Good (Director, RMC Employee Health Service), Dr. I. Noh (Director, RMC Infection Control), Dr. A.W. Shucks (Director, RMC Medical Staff), and Chief Executive Officer Mr. I.C. Nott. In addition to the aforementioned key hospital personnel, other crucial characters include State Senator G. Glory

¹ Scabies is a contagious disorder of the skin caused by very small mites called the "Human Itch Mite" or the "Scabies Itch Mite," *Sarcoptes scabiei* var. *hominis* (Hering). These mites are too small to be seen without magnification. The female insect burrows into the skin where she lays 1 - 3 eggs daily. Symptoms include intense itching (especially at night) and a red zigzag rash. The most common locations for scabies infestation are on the sides of fingers, between the fingers, on the backs of the hands, on the wrists, heels, elbows, armpits, inner thighs and around the waist (belt line). If untreated, the female will continue to lay eggs for about five weeks. These eggs hatch, and the new mites repeat the previously described cycle.

"Scabies is spread by personal contact, e.g., by shaking hands or sleeping together or by close contact with infected articles such as clothing, bedding or towels. It is usually found where people are crowded together or have frequent contact, and is most common among school children, families, roommates, and sexual partners. Scabies can be spread by the insect itself or by the egg. Prompt action is required to rid a person of the insects and eggs." S. Tvedten, The Best Control, Chapter 16.

² The National Nosocomial Infections Surveillance (NNIS) System defines the term "nosocomial infection" as:

"... a localized or systemic condition 1) that results from adverse reaction to the presence of an infectious agent(s) or its toxin(s) and 2) that was not present or incubating at the time of the admission to the hospital," NNIS Manual, Section XIII, May 1994, unpublished.

³ Each year, approximately 2,000,000 patients in the United States acquire infections while hospitalized for other, original conditions. These infections account for 88,000 deaths and cost approximately \$4.6 billion on an annual basis. (CDC, MMWR Weekly, February 25, 2000/49/7; 138).

⁴ Reference for case study is County of Los Angeles, Department of Health Services, Acute Communicable Disease Control Special Studies Report 1996.

⁵ The term "crusted scabies" is defined as a highly contagious atypical presentation of scabies characterized by extensive hyperkeratotic skin lesions with formation of crusts and scales that are heavily imbedded with thousands of mites.

CRUSTED SCABIES!

A Nosocomial Outbreak in Raid County, Bug-Away City, Illinois

A CASE STUDY IN ASSURANCE

and County Board of Commissioners President G. Hublot (local politicians); Mr. G. Bumble, Director of the Raid County Department of Health (RCDOH), and a cameo appearance by inspectors from the Illinois Department of Public Health (IDPH), (the health professionals responsible for assuring the health status of communities in Raid County).

Finally, the ensuing case study focuses on the core function of **assurance**. Whether in a private or a public health setting, healthcare leaders must develop, implement and monitor policies that safeguard and/or even improve the health status of persons for whom they are responsible. Indeed, it can be argued that the ultimate goal of public health activities is to create environments where disease is prevented and health is promoted. Thus, the MARPHLI reader should peruse the following case study with an eye towards answering this general question: **What more should be done to assure the public's health in the instant case, and in any other case of nosocomial infection?**

Case Body

On **Sunday, March 3, 2002**, Dr. R.T. Ire, Medical Director of Bug-A-Way Terrace Nursing Home, was conducting a routine physical examination on resident Emma Elder, an eighty-two year old woman with dementia. During his exam, Dr. Ire discovered that Ms. Elder had a large and draining bedsore located on her lower back. Dr. Ire immediately ordered the facility's transporter, George Tomson, to take Ms. Elder, by van, to the emergency room at Richland Medical Center (RMC). The Medical Center is located in an affluent suburb of Bug Away City.

Upon presentation to the emergency room (ER), Ms. Elder was triaged by D. Hatchet, R.N., and seen by the emergency physician on duty, Dr. Stich A. Lot, M.D. During the course of Ms. Hatchet's triage exam, the nurse noted redness, cracking and some scabbing around the patient's third and fourth finger on the right hand and the fourth and fifth finger on the left hand. She joked with the patient, who was clearly upset by the transport. As the ER was not presently busy and because Dr. Lot was not yet ready to examine Ms. Elder, Ms. Hatchet retrieved some hand lotion, removed her latex gloves, and massaged it into Ms. Elder's hands. This act of kindness noticeably calmed Ms. Elder. By the time Dr. Lot was prepared to conduct his examination, Ms. Elder was quiet and comfortable. In passing, Ms. Hatchet informed Dr. Lot of her findings with respect to Ms. Elder's right hand.

During his examination of Ms. Elder, Dr. Lot found another dry skin condition on the crown of Ms. Elder's head. Dr. Lot recorded both conditions as eczema⁶; he ordered a course of antibiotics for the bedsore and the application of topical hydrocortisone for the eczema. He then began preparing to admit Ms. Elder to the fourth floor inpatient unit for the aforementioned treatments and for observation.

Before Dr. Lot could finish Ms. Elder's admitting order, Raid County Emergency Medical Services (RCEMS) rushed into the Medical Center's ER, wheeling patient I. B. Dunfore—the victim of a car accident on nearby Route 666, with suspected multiple blunt trauma. Dr. Lot rushed to treat Mr. Dunfore, instructing Ms. Hatchet to complete the admission process for Ms. Elder.

On **March 15**, R. Essex, a RMC housekeeper visited the Employee Health Service (EHS), staffed by I.C. Rite, R.N. Essex presented with complaints of redness and severe itching on his left hand (between the digits) and forearm. During her examination, Nurse Rite observed that both Mr.

⁶ The term "atypical non-cruled scabies" is defined as a severe scabies infestation with hundreds of mites characterized by non-cruled skin lesions that resemble other cutaneous conditions such as eczema or drug reactions.

CRUSTED SCABIES!

A Nosocomial Outbreak in Raid County, Bug-Away City, Illinois

A CASE STUDY IN ASSURANCE

Essex's left hand and forearm were heavily crusted and scaled. She correctly identified the classic symptoms of crusted scabies, later confirmed by a skin test ordered by I. M. Good, M.D., Director of RMC's EHS. During that afternoon, and over the course of the next three days, a total of twenty-seven employees presented with similar symptoms, including an itching and twitching Nurse Hatchet, who had, in the last two weeks, used over ten tubes of hand lotion, to no avail—her "ashiness" persisted.

On **Saturday, March 16**, after the seventh diagnosis, a frantic Dr. Good contacted Dr. I. Noh, Director of Infection Control, to discuss the possibility of a hospital-based nosocomial outbreak. Late in the afternoon on **Monday, March 18**, in an urgent meeting called by Dr. Noh and Dr. Good, mild-mannered and affable Dr. A.W. Shucks, President of the Medical Staff of RMC, and extremely busy and otherwise important I. C. Nott, Chief Executive Officer of RMC, were made aware of the extent of the potential outbreak—twenty-three confirmed employee cases of scabies at RMC to date. Of these cases, six staff worked in the Emergency Department, eight in Housekeeping, and twelve in Nursing.

Dr. Good recommended that Hospital administration notify the Raid County Department of Health (RCDOH) about the situation at RMC posthaste, for the purposes of alerting other area providers to: (1) watch for additional cases; and (2) to instruct their staffs to check for symptoms of scabies. At this suggestion, Mr. Nott quickly pointed out that scabies is not on Illinois' list of reportable diseases. Further, he raised the question as to whether it was at all realistic to believe that the hospital could be the source of the outbreak.⁷

For his part, Dr. Shucks admitted that he was personally aware of three patients that had presented to the RMC ER who received an initial diagnosis of scabies, pending lab results.⁸ Dr. Shucks opined that notifying RCDOH would have the effect of being public notification, and that such information could negatively impact the Hospital's current efforts to recruit medical residents for the summer. While he did not say it in the meeting, it should be noted that Dr. Shucks obtained his information about the potential nosocomial outbreak directly from Dr. Lot—a close personal friend. In fact, the pair had completed residency together at Memorial Hospital. In light of all these reasons, it was agreed by Mr. Nott, Dr. Shucks and Dr. Noh, that no notifications would be made until it could be established that the Medical Center was in fact a primary focus of the outbreak.

On **Tuesday, March 19**, six more staff presented to EHS with symptoms of scabies—two from Nursing, three from Housekeeping, and one from Medical Records. Mr. Nott is advised that the employee rumor mill is "running rampant" with stories of a hospital-wide epidemic. Then, on **March 24**, in the Sunday edition of the *Richland Chronicle*, a story on page four detailed the outbreak of a "benign" skin condition at RMC. On **Tuesday, March 26**, the *Bug-A-Way Gazette* ran a front-page story: "*Scabies Scabbing Richland M.C.*" in which it was stated that "...at least 156 cases" have been confirmed among the Medical Center's 2,089 employees. Additionally, 56 cases have been "...confirmed in other treatment settings throughout the county, including BAW Community Clinic and the State University Clinic in nearby Watertown."

⁷ While the occurrence of scabies in long-term facilities is common, outbreaks in acute-care hospital settings occur sporadically, and are usually associated with exposure to a specific patient manifesting an atypical scabies presentation. Atypical scabies presentations may result when diagnosis and treatment are delayed. Manifestation is more prevalent in institutionalized or debilitated patients as well as among those who are immuno-suppressed from underlying disease or drug therapy.

⁸ Because its symptoms mimic those of numerous other common skin conditions, e.g., eczema, scabies is notoriously difficult to diagnose; a true—i.e., a confirmatory—diagnosis of scabies, requires taking a scraping of skin at the site(s) of itching on a patient's body.

CRUSTED SCABIES!

A Nosocomial Outbreak in Raid County, Bug-Away City, Illinois

A CASE STUDY IN ASSURANCE

On the morning of Tuesday, **March 26**, Illinois State Senator G. Glory and the Honorable G. Hublot, President of Raid County's Board of Commissioners, called Mr. G. Bumble, Director of the RCDOH, and demanded action. Bumble responded that per the State's reportable diseases classifications, his department lacked jurisdiction. On Thursday evening, **March 28**, Jay Leno of NBC's *Tonight Show*, included "*Bugaboo in Bug Away*" in his opening monologue. The following day, **March 29**, Bumble announced that the RCDOH has opened an investigation into the outbreak, and invited all area residents with suspicious symptoms to be screened at the county's free clinic. He also demanded a meeting with RMC administration, much to the chagrin of Mr. Nott.

During the next twelve days (**March 30 – April 10**), Dr. Good led an epidemiological investigation to determine the origin of the outbreak. Dr. Good's team reviewed patient records and extracted relevant data. His study included information on the suspected index case, and variables such as: (1) days of potential exposure; (2) numbers and types of hospital units affected; (3) duration of the outbreak; (4) secondary cases among staff and patients, and transmission of scabies to their households or close contacts; (5) prophylactic treatment of contacts; and (6) the results of post-discharge patient follow-up. While conducting his study, Dr. Good received cooperation from major area hospitals and major area clinics, with the exception of the T. Tech Medical Group (132 physicians). Overall, he and his staff identified a total of 289 confirmed cases. Of these, 58 were employees of RMC, and 131 were not. Of the 131 non-employee cases, Dr. Good's staff was able to confirm that at least 37 of these had been medical center inpatients between February 18 and March 31. Dr. Good's investigation concluded that the Hospital was a focus of origin sometime between February 18 and March 7.

On **April 10**, a reluctant Dr. Shucks authorized written notification to all patients discharged between February 18 and March 31, as well as to all RMC employees. With the assistance of RCDOH, Dr. Good arranged for home health visits for all who called with symptoms. Those whose symptoms were confirmed were treated; moreover, close contacts of confirmed patients were also provided with prophylaxis. During the next six weeks (**April 10 – May 15**), six new cases were confirmed.

On **May 2**, responding to sixteen complaints to the U.S. Center for Medicare Services, the Illinois State Department of Public Health (IDPH) sent a team of six inspectors to RMC for three days. In the exit report, the chief inspector noted, "...confirmed instances of violations of infection control protocols, including failure of staff to properly change gloves between contacts with multiple patients." In his report to the Hospital's Board of Directors, Mr. Nott cited the portion of the inspection report which stated that: "... nothing was identified which can directly link RMC with the subsequent spread of crusted scabies."⁹

By **June 5**, there had been no new cases of scabies reported in the County for three weeks. However, on **June 30**, RMC announced a layoff of fifteen percent of its workforce due to its twenty-eight percent occupancy rate. Meanwhile, on **July 4**, the Bug-A-Way Citizens for

⁹ A determination of whether an infection is "*nosocomial*" in nature relies on:

- 1) Clinical findings in the patient's medical history;
- 2) Laboratory tests;
- 3) Supportive data such as X-Rays, ultrasound etc; and,
- 4) Physician's observations.

There are two special situations that NNIS additionally defines as "nosocomial in nature:"

- 1) an infection that is acquired in the hospital but does not become evident until after hospital discharge; and
- 2) an infection in the neonate that results from passage through the birth canal.

In contrast, there are two special situations that NNIS does not consider nosocomial in nature:

- 1) an infection that is associated with a complication or extension of an infection already present at admission; and
- 2) in a neonate, an infection known or proved to have been acquired via placenta (e.g. Toxoplasmosis, rubella) and that becomes evident at or before 48 hours after birth.

CRUSTED SCABIES!

A Nosocomial Outbreak in Raid County, Bug-Away City, Illinois

A CASE STUDY IN ASSURANCE

Responsible Medicine, through the offices of J. W. Howe of Duey, Cheatham and Howe, announced a class action lawsuit against the RMC for \$120 million, “ [for] ... gross negligence in the face of a fully preventable occurrence. ”

By the end of 2002 a total of 242 hospital staff and 119 patients were identified in the thirteen outbreaks in Raid County. In eleven of the thirteen outbreaks, over 2,200 hospital staff and over 700 patients received prophylactic treatment for scabies. Data was not reported from the other two outbreaks where staff and patients on three different hospital units received mass prophylactic treatment for scabies.

The five outbreaks accounting for 87.2 percent (211 / 242) of the staff cases all involved ancillary, and in some instances, non-patient care staff. Interviews with staff cases in the larger outbreaks revealed that staff cases with the earliest onset of symptoms were those who had direct contact with the source case, or the source case's immediate environment. Staff cases with later onset of symptoms were likely infected by contact with other health care workers or contact with the hospital's physical environment.

Meanwhile, approximately two-thirds (69 / 119) of patient cases developed symptoms after they were discharged. In light of this fact, 3,000 patients from six of the outbreaks were followed up, post-discharge, by RCDOH public health nurses. Approximately seventy percent (2,100/3000) of these patients were located, and the mean attack rate among these individuals was 9.8 percent. Chart 1 illustrates the confirmation of scabies cases, throughout the outbreak.

Case Conclusion

On **July 5**, Mr. Bumble convened a blue ribbon panel of learned experts (of whom you are one) to conduct a root cause analysis into the failure of current public health guidelines for the management of crusted scabies. As he is your average mindless career bureaucrat, he is sincerely hoping that your bright, eager mind will come up with reasons why the current guidelines are inadequate; with policy recommendations to strengthen them; and with creative ways to disseminate them to the healthcare professionals who most need to know about how to prevent such outbreaks in the future. In addition, Mr. Bumble is clearly open to any other suggestions that will guide his efforts in the future. Please help Mr. Bumble! You are Raid County's only hope!

The Moody Blues:

MARPHLI YEAR 12

Jeffrey Mark

Laura Michalski

John Mickle

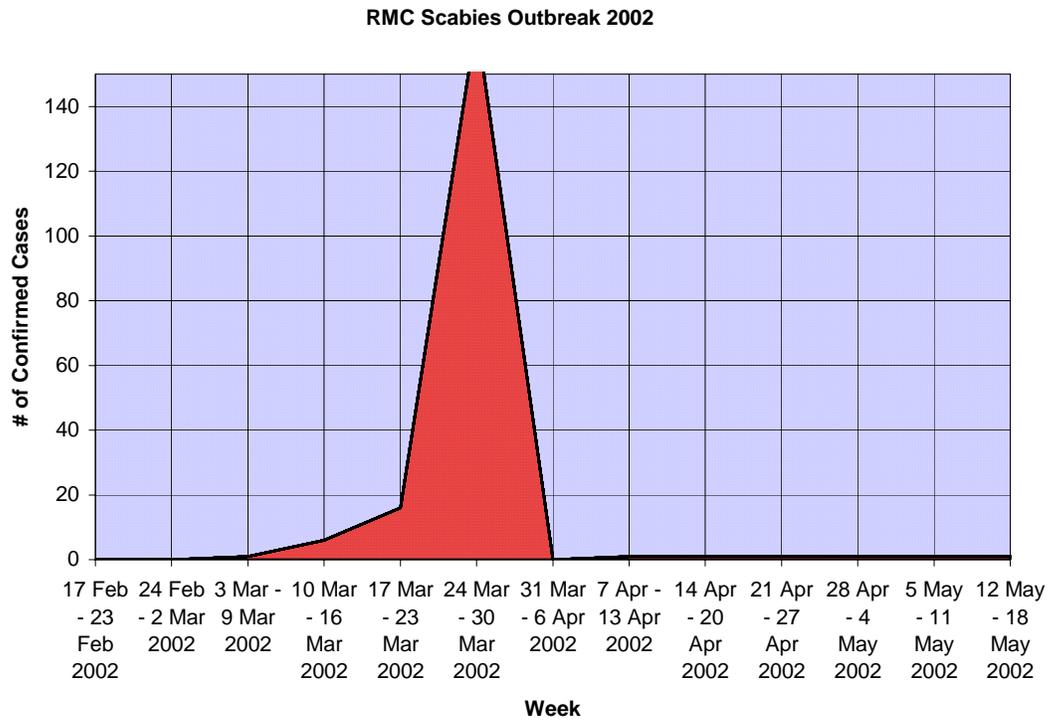
Rhonda Mundhenk

Rory Slater

Angela Wilson

William Mays -- Mentor

Confirmed Cases/Time



Study Questions



Cite the hospital's primary deficiencies in protecting the health of patients, staff and visitors. What comparatively basic activities or interventions could have prevented—or at least contained—this outbreak?



Discuss any additional circumstances—foreseen or unforeseen—that exacerbated the hospital's management burden in this outbreak.



Identify the external entities that impacted events and decision-making. Discuss the effect each had in resolving or frustrating events.



The county health department was notified at an extremely late date in the outbreak. What expertise could have been offered and to what probable effect?



You are the CEO of Richland Medical Center, and after the “cost and casualties” mount, you consider your options. What are your top priorities? What entities or persons would you engage and what would your objectives be?

Glossary



“**Atypical non-crusted scabies**” is identified as a severe scabies infestation with hundreds of mites characterized by non-crusted skin lesions that resemble other cutaneous conditions such as eczema or drug reactions.



“**Crusted scabies**” is defined as a highly contagious atypical presentation of scabies characterized by extensive hyperkeratotic skin lesions with formation of crusts and scales that are heavily imbedded with thousands of mites.



An “**employee case**” is defined as any hospital staff member with a positive scraping for scabies, or a clinical diagnosis confirmed by employee health.



A “**nosocomial scabies outbreak**” is defined as scabies infestation confirmed in two or more healthcare workers or patients within a six-week period of time in which there are no other known sources of exposure beyond the walls of the hospital.



A “**patient case**” is defined as any patient identified as potentially exposed to a source case with a positive scraping for scabies or symptoms of pruritus and rash.



A “**source case**” is defined as a patient with a positive skin scraping for scabies, or a clinical diagnosis of scabies made by a physician.