Management of outbreaks in health facilities

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Scinario

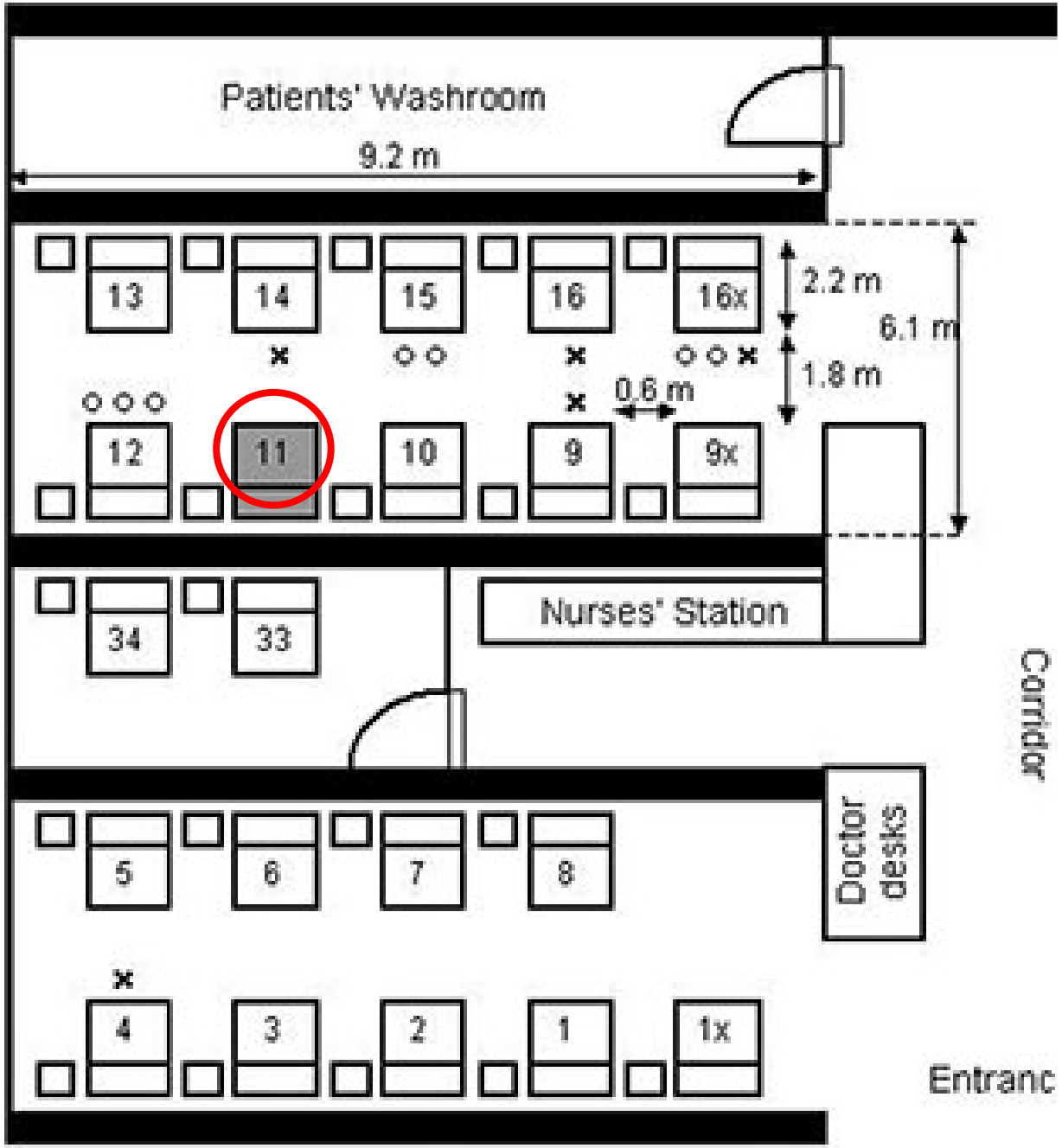
A 32 y/o male presented with fever x 5 days, rash and loss of appetite x 1day, and was admitted on May 17, 2018.

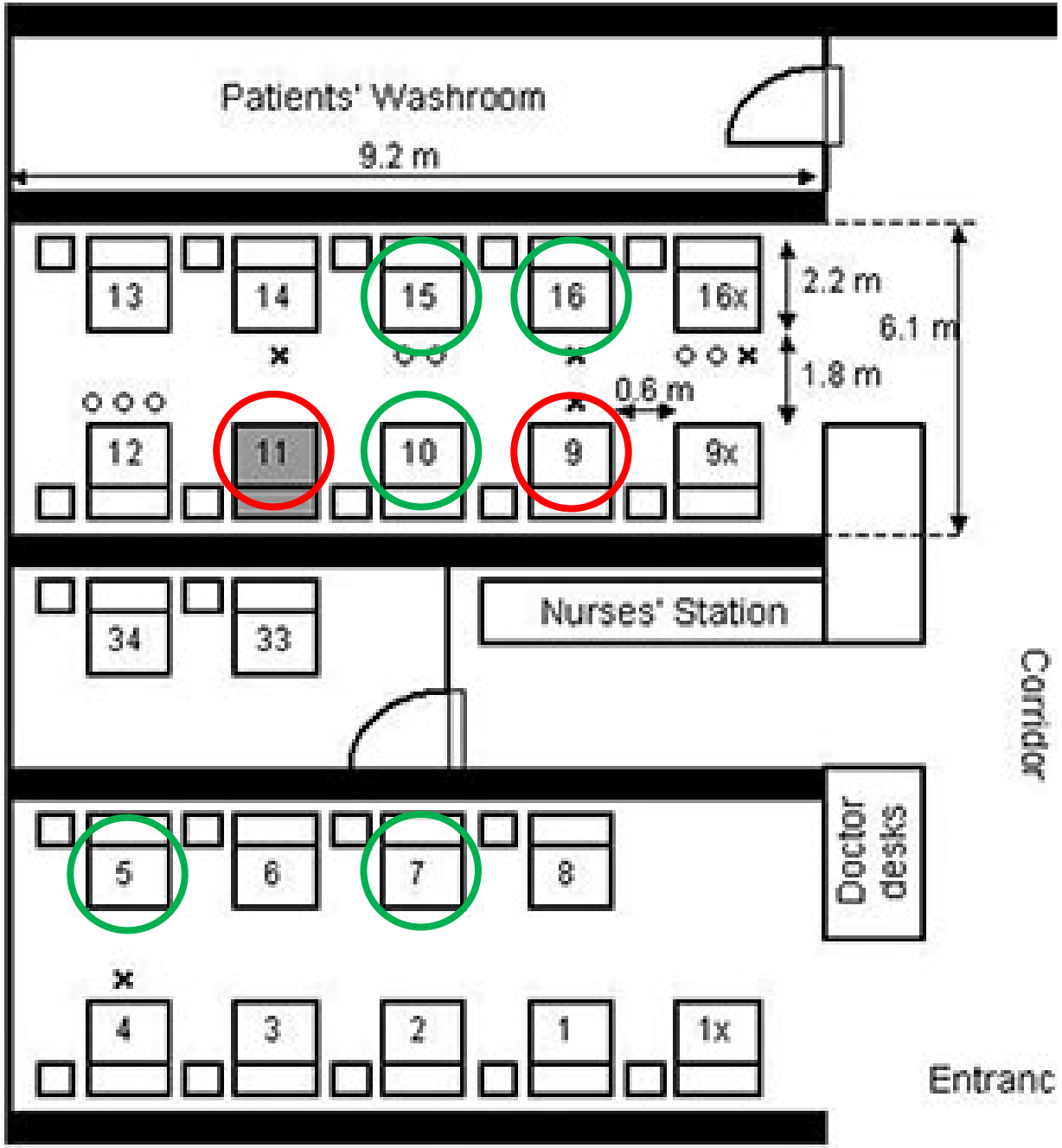
Patient was diagnosed with measles on May 20.

Scinario

Your colleague told you on May 30;

“There are some patients who recovered and are waiting for discharge, but they developed fever and rash recently…”


Patients' Washroom
9.2 m
13
14
15
16
16x
2.2 m
6.1 m
1.8 m
0.6 m
12
11
10
9
9x
34
33
Nurses' Station
Corridor
Doctor desks
5
6
7
8
4
3
2
1
1x
Entranc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Entranc

Is this an outbreak?

What would you do?

World Health Organization

REGIONAL OFFICE FOR Europe

Guidelines for measles and rubella outbreak investigation and response in the WHO European Region

(http://www.euro.who.int/__data/assets/pdf_file/0003/217164/OutbreakGuidelines-updated.pdf?ua=1)

Is this an outbreak?

In the WHO European Region, outbreaks of measles and rubella are defined as follows:

- measles outbreak – 2 or more laboratory-confirmed cases which are temporally related (with dates of rash onset occurring between 7 and 18 days apart) and epidemiologically or virologically linked, or both;

(http://www.euro.who.int/__data/assets/pdf_file/0003/217164/OutbreakGuidelines-updated.pdf?ua=1)

Basic steps of outbreak investigation and response

1. Confirm the occurrence of outbreak
2. Define “case definition,” active surveillance using ”case definition”
3. Monitor and survey the onsite and associated facilities
4. Understand characteristics of the cases: time, place, person

   Line-listing → schematize
5. Establish hypotheses about the source of infection/transmission route and risk factors
6. Verify the hypotheses
7. Attempt measures to prevent the spread of infection, propose future preventative measures
8. Prepare investigation report

(* Implement infection control measures as necessary)

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Definition

The clinical criteria for measles are:

- fever *and*
- maculopapular rash (i.e. non-vesicular rash) *and*
- cough *or* coryza (runny nose) *or* conjunctivitis (red eyes).

The laboratory criteria for measles surveillance case confirmation are:

- measles immunoglobulin M (IgM) antibody detection *or*
- measles virus isolation *or*
- measles viral ribonucleic acid (RNA) detection by reverse transcription- (RT)-PCR *or*
- a significant rise in measles immunoglobulin G (IgG) antibody in paired sera.

(http://www.euro.who.int/__data/assets/pdf_file/0003/217164/OutbreakGuidelines-updated.pdf?ua=1)

Case definition

Time:	May 16-May 28, 2018
Person	all inpatients and healthcare providers who meet the clinical criteria
Place	Ward ○○ and ○○

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Line listing

ID	Date of Onset	Location	Age	Gender	Vaccine status
○○○○	May 16	○○○	○○	M	No
○○○○	May 24	○○○	○○	M	No
○○○○	May 24	○○○	○○	F	No
○○○○	May 25	○○○	○○	M	Unknown

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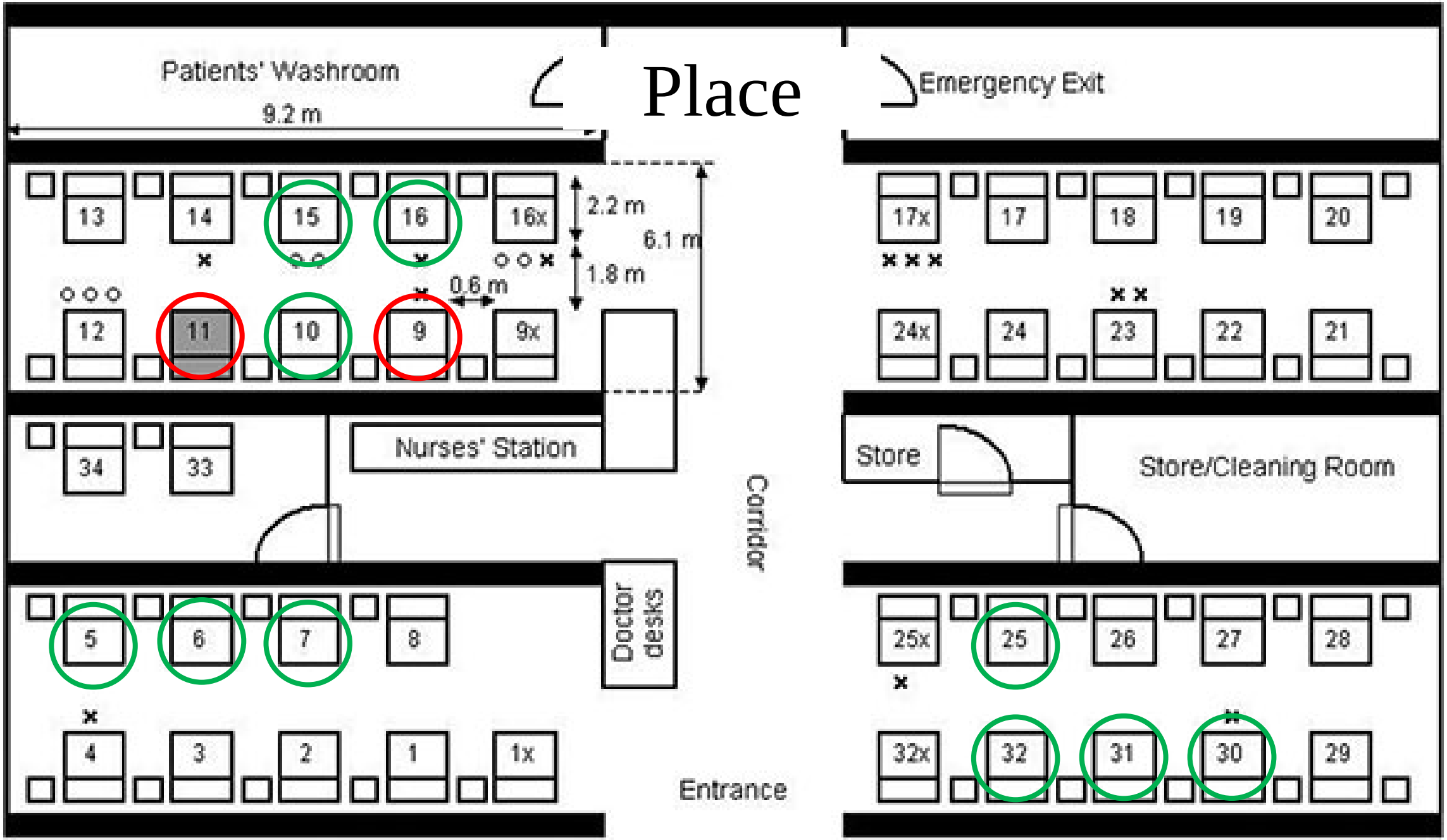
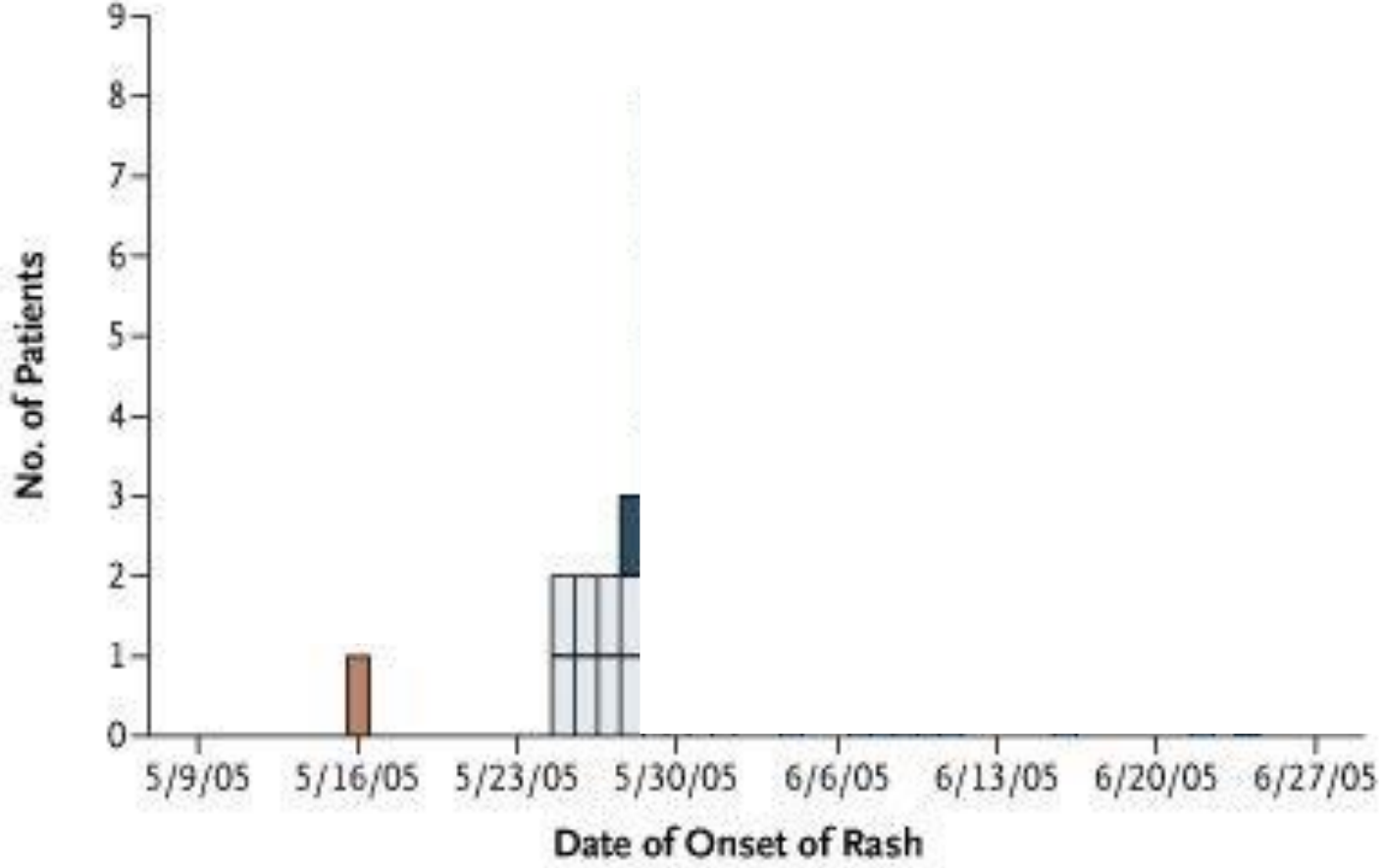

Place
Patients' Washroom
9.2 m
Emergency Exit
13
14
15
16
16x
17x
17
18
19
20
2.2 m
6.1 m
1.8 m
0.6 m
12
11
10
9
9x
24x
24
23
22
21
34
33
Nurses' Station
Store
Store/Cleaning Room
Corridor
Doctor desks
5
6
7
8
25x
25
26
27
28
4
3
2
1
1x
32x
32
31
30
29
Entrance

Time


No. of Patients
0
1
2
3
4
5
6
7
8
9
5/9/05
5/16/05
5/23/05
5/30/05
6/6/05
6/13/05
6/20/05
6/27/05
Date of Onset of Rash

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5. Recommendations for outbreak response

Member States should establish capacity for early detection and response to outbreaks with an overall goal of putting in place a rapidly responsive system to determine source of exposure, identify patients' contacts and detect additional cases through epidemiologic investigation, and to prevent further transmission by implementing timely and appropriate response measures. The primary strategy for control of measles and rubella outbreaks is to ensure a high level of immunity in the affected population. The response to measles and rubella outbreaks should include the following core activities: isolation of cases, contact management, immunization activities in response to outbreak, advocacy and communication to ensure effective community involvement and public awareness, and description of the outbreak and lessons learned. These activities are described below.

(http://www.euro.who.int/__data/assets/pdf_file/0003/217164/OutbreakGuidelines-updated.pdf?ua=1)

Infection control

STANDARD

CONTACT

AIRBORNE

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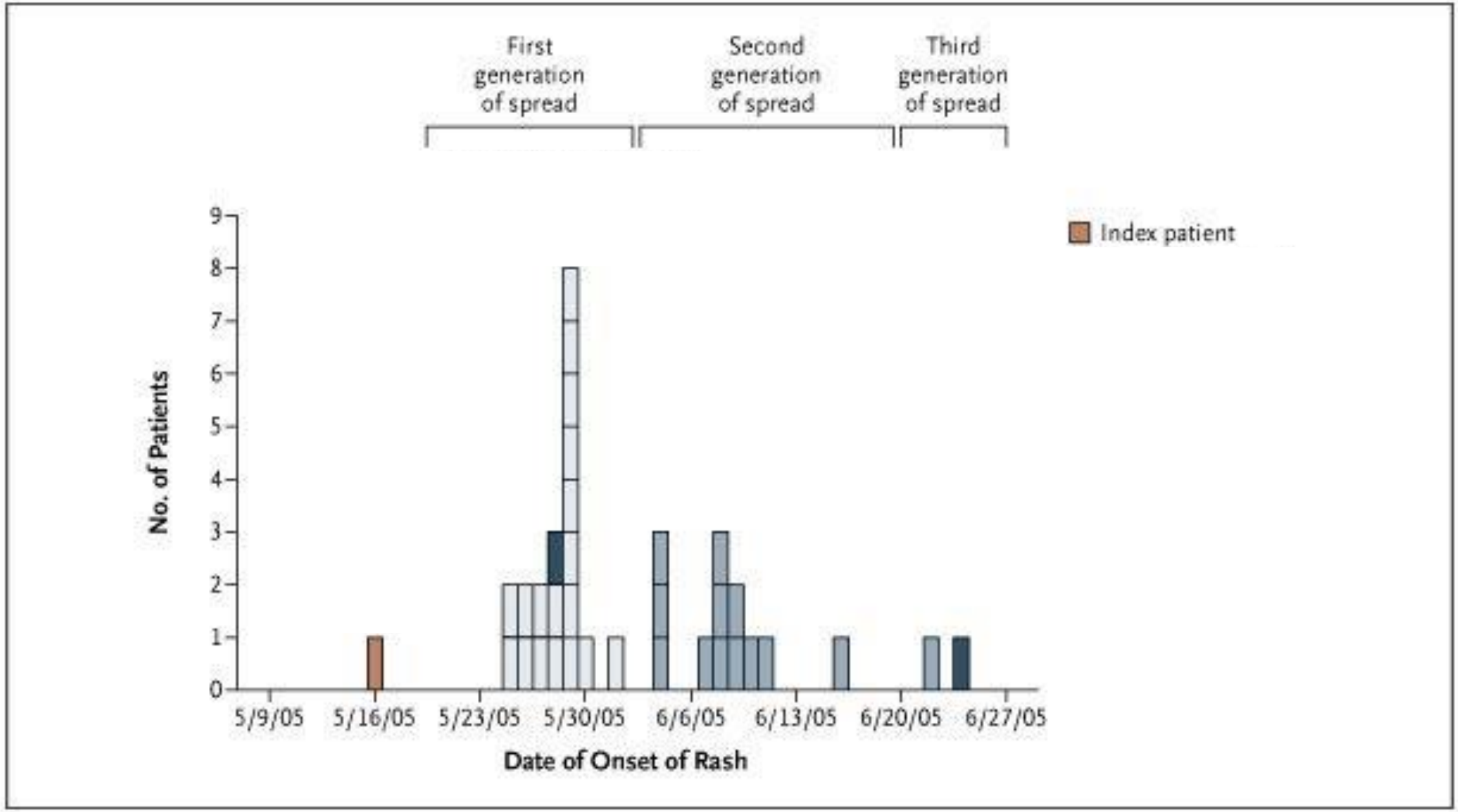
First generation of spread
Second generation of spread
Third generation of spread
Index patient
No. of Patients
0
1
2
3
4
5
6
7
8
9
5/9/05
5/16/05
5/23/05
5/30/05
6/6/05
6/13/05
6/20/05
6/27/05
Date of Onset of Rash

Open discussions