

Scenario date: 12 December  
Inject Number: 1  
Time: 0930  
To who: All

### **Background**

*Klebsiella pneumoniae* is known to cause healthcare-associated infections and is commonly multidrug-resistant. A new variant of *K. pneumoniae*, designated as hypervirulent *K. pneumoniae* (hvKP), was first described in 1986 in Taiwan in patients with community-acquired *K. pneumoniae* infections. The hvKP strains exhibit unique features, such as a striking capacity to cause serious infections in immunocompetent and healthy individuals. Such infections include pyogenic liver abscesses and metastatic infections, such as meningitis and endophthalmitis. hvKP exhibits a hypermucoviscous phenotype that can be identified in the laboratory by a positive “string test.”

After this first description of hvKP, additional reports followed and hvKP has been since reported in Asia, South America, North America, the Middle East, Europe, Africa, and Australia. Increasingly, carbapenem resistance in hvKP isolates is being reported, especially from China. Combined with the increased virulence of hvKP strains, the emergence of carbapenem resistance is an additional cause for concern that indicates a need for preparedness.



## SIMEX ROME 2018

### EXERCISE - EXERCISE - EXERCISE

Scenario date: 12 December  
Inject Number: 2  
Time: 0935  
To who: Spain only

The Spanish Coordinating Centre for Health Alerts and Emergencies at the Ministry of Health, Social Services and Equality is informed by the Hospital of Madrid about two fatal cases of carbapenem-resistant *Klebsiella pneumoniae* (CRKP) infection in two young, previously healthy adults in the hospital. The patients suffered fulminant sepsis without responding to treatment with a combination of tigecycline and fosfomycin. One of the patients (a 26 yo Spanish football player) was transferred three days ago from Genoa's Hospital, Italy, for rehabilitation and to be closer to his family after a traffic accident whereby he had suffered a fracture of the right femur, multiple rib fractures and a rupture of the spleen. Two days ago while at the Hospital in Madrid, he developed high fever and soon afterwards septic shock, and was transferred to the intensive care unit (ICU) where he died this morning with fulminant sepsis.

The other, a 28yo female, also died overnight.



## SIMEX ROME 2018

### **EXERCISE - EXERCISE - EXERCISE**

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Scenario date: 12 December  
Inject Number: 3  
Time: 0935  
To who: All

Media story

## HOSPITAL OF MADRID

# PRESS STATEMENT

12 December 2018

### Patients are safe and hospital infection under control

Firstly, we wish to extend our condolences to the family, friends and loved ones of the deceased patients.

We want to reassure our patients and the public that our hospital is safe. The infection that spread and proved to be fatal to a handful of our patients, is under control.

We have put together a team of experts --- epidemiologists, microbiologists, health-infection experts --- to get to the root of the matter. All our staff - from the Chief of Medical Services to nurses, cleaners and restaurant servers - are trained and well aware on how to prevent the spread of hospital infection.

For this particular incident, we have worked with various laboratories, regional public health institutions to identify the source of the infection and how to properly address it. We are continuously working with these institutions to gather more data, to help prevent hospital infection.

For interview request, please contact our press office: [press@hosp.es](mailto:press@hosp.es) or +34 XXXX -234

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*Trust us, we care*

13 Alle Hospital  
Madrid, Spain

*Only fake news*

# En Espanol newspaper

12 December 2018

## Spanish footballer dies from hospital infection

**Spain national football team member Paul Johnson, died yesterday after a brief stay at the Hospital in Madrid, Spain.**

The famous 26-year old AC Milan midfielder was initially admitted to a hospital in Genoa, Italy after contracting injuries from a traffic accident.

According to anonymous sources, he was then transferred to Hospital in Madrid three days ago and his conditioned worsened. He succumbed to fulminant sepsis at an intensive care unit.

According to the same unnamed sources, three patients have died, at the same time in the same Spanish hospital, due to infection acquired during their confinement.

The patients were infected with carbapenem-resistant *Klebsiella pneumoniae*, making it extremely difficult to treat since antibiotics do not work against this infection. Carbapenem is often considered an be an antibiotic of last resort. These infections are usually acquired in hospitals, nursing homes and other health care settings. Healthy patients normally get infected through ventilators, urinary or

**EXERCISE - EXERCISE – EXERCISE**

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intravenous catheters and patients who are taking long courses of antibiotics are of particular risk.

There were outpouring grief from footballer's family, teammates and football fans worldwide. The footballer is remembered by many as the bright light in an otherwise forgettable World Cup 2018 and it is he that fans expected the future squad to be based around, given the retirement of so many former stars.

“He was so young and very healthy before this terrible accident.” says footballer's father, Thomas senior, “it is unacceptable and tragic that hospitals kill you instead of healing.”

The hospitals in Italy and Spain have not yet provided comments to the media. Statements from public health authorities are also eagerly awaited.

**Note:**

*Sepsis is a life-threatening condition that arises when the body's response to [infection](#) causes injury to its own tissues and organs.*

Scenario date: 13 December  
Inject Number: 4  
Time: 10:00  
To who: Italy only

It is 13 December.

The Genoa's hospital originally learned about the outbreak in Madrid through the media and an investigation has been initiated at the hospital. The IPC team, in collaboration with the clinical microbiology laboratory, have so far identified three cases with carbapenem resistant *Klebsiella pneumoniae* sepsis in the surgical ward in the last fifteen days. The first case to be identified was a 57-year-old Italian national, a businessman, who had been transferred three weeks ago from a hospital in Bulgaria, where he was hospitalised after a traffic accident that he suffered during a business trip. The second was the footballer who was transferred to Spain and the third a Maltese national who remains in ICU. However, the Genoa's hospital laboratory has indicated that they believe the isolates from the three patients most likely are not the same strain as one was colistin-resistant but the other two, one of which was the businessman, were colistin-susceptible as indicated by the gradient test (E-test).

The Genoa's hospital is a specialised hospital with expertise in traumatology and orthopaedics. The orthopaedic ward has 48 beds with a high turnover of admissions. Patients are often being admitted from foreign hospitals to undergo specialised operations. The IPC team has initiated screening within the hospital to identify further cases. Among the patients admitted to the same surgical ward at the same time as the businessman and the football player, two were from Malta, one from Greece, one from Portugal and one from Turkey as well as 20 Italian patients. The Greek, Portuguese and Turkish patients have since returned home for further treatment and recuperation.





Table 1

← → Antimicrobial resistance ▾ Klebsiella pneumoniae ▾ Carbapenems ▾ Resistant (R) isolates proportion ▾ 2017 ▾

Region	Non-susceptible (I and R) isolates proportion (%)	Resistant (R) isolates proportion (%)	Total tested isolates (N)	Non-susceptible (I and R) isolates (N)	Resistant (R) isolates (N)
Austria	1.0	1.0	1109	11	11
Belgium	1.8	1.1	791	14	9
Bulgaria	16.0	12.4	169	27	21
Croatia	4.3	0.0	302	13	0
Cyprus	16.9	15.5	71	12	11
Czech Republic	1.0	0.4	1051	10	4
Denmark	0.3	0.3	1185	3	3
Estonia	0.0	0.0	143	0	0
Finland	0.5	0.3	758	4	2
France	1.4	0.7	2807	38	19
Germany	0.6	0.5	3549	23	18
Greece	65.7	64.7	1363	895	882
Hungary	0.3	0.3	681	2	2
Iceland	-	-	0	0	0
Ireland	0.6	0.2	478	3	1
Italy	32.1	29.7	2634	846	782
Latvia	2.6	1.7	116	3	2
Lithuania	2.2	0.6	325	7	2
Luxembourg	3.0	0.0	99	3	0
Malta	19.7	10.3	117	23	12
Netherlands	0.5	0.5	1190	6	6
Norway	0.0	0.0	781	0	0
Poland	7.2	6.4	1161	84	74
Portugal	9.7	8.6	2720	263	235
Romania	31.4	22.5	334	105	75
Slovakia	5.6	4.4	450	25	20
Slovenia	0.3	0.0	312	1	0
Spain	3.6	2.7	1442	52	39
Sweden	0.1	0.1	1033	1	1
United Kingdom	0.7	0.6	5274	38	31



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Scenario date: 13 December  
Inject Number: 6  
Time: 1000  
To who: Spain only

It is 13 December.

A third 43-year-old patient with fulminant meningitis with carbapenem-resistant *Klebsiella pneumoniae* (CRKP) is being treated in the ICU of the same hospital in Madrid. The hospital's clinical microbiology laboratory confirms that the isolate has the same resistance phenotype as the isolates from the other two patients who died.

A review of *Klebsiella pneumoniae* isolates at the laboratory identifies three additional isolates from three different patients in the last fifteen days. The infection prevention and control (IPC) team decides to perform active screening cultures on all patients who have been admitted to the same ICU and other wards where the patients had previously been admitted

Scenario date: 13 December  
Inject Number: 6  
Time: 1000  
To who: Spain only

It is 13 December.

A third 43-year-old patient with fulminant meningitis with carbapenem-resistant *Klebsiella pneumoniae* (CRKP) is being treated in the ICU of the same hospital in Madrid. The hospital's clinical microbiology laboratory confirms that the isolate has the same resistance phenotype as the isolates from the other two patients who died and that all three are hypermucoviscous as identified by the "string" test, possibly with enhanced virulence (hypervirulent *Klebsiella pneumoniae* – hvkp).

A review of *Klebsiella pneumoniae* isolates at the laboratory identifies three additional isolates from three different patients in the last fifteen days. The infection prevention and control (IPC) team decides to perform active screening cultures on all patients who have been admitted to the same ICU and other wards where the patients had previously been admitted









## SIMEX ROME 2018

### EXERCISE - EXERCISE - EXERCISE

Scenario date: 13 December  
Inject Number: 9  
Time: 1130  
To who: All

ECDC have arranged a teleconference for **1200** today. All countries and international organisations are invited to attend by sending 1 person to the teleconference table at 12. All others may gather round the table to advise their participant and listen.

Agenda items to consider in preparation for the t/c

1. Purpose of t/c - ECDC
2. Epidemiological update from the countries affected on the outbreak and associated investigation of hyper-virulent carbapenem-resistant *Klebsiella pneumoniae*
3. Microbiological update – all countries affected
4. Infection prevention and control measures – update from all on suggested measures they would be taking if impacted by a similar situation
5. Next steps - all
6. AOB

Scenario date: 13 December  
Inject Number: 10  
Time: 1200  
To who: All

### Agenda

1. Purpose of t/c - ECDC
2. Epidemiological update from the countries affected on the outbreak and associated investigation of hyper-virulent carbapenem-resistant *Klebsiella pneumoniae*
3. Microbiological update – all countries affected
4. Infection prevention and control measures – update from all on suggested measures they would be taking if impacted by a similar situation
5. Next steps - all
6. AOB



## SIMEX ROME 2018

### EXERCISE - EXERCISE - EXERCISE

Scenario date: 22 December  
Inject Number: 11  
Time: 1330  
To who: Greece

It is 22 December.

A Greek male (21-year-old) was transferred 10 days ago from the Galliera hospital in Genoa, Italy. He is suffering from paraplegia after an accident three years ago and has undergone multiple surgical interventions because of recurrent pelvic osteomyelitis. He is now hospitalised in a private hospital in Athens with fulminant sepsis. Active screening with rectal swabs has been initiated. Three patients, one from Albania, one from Montenegro and the third from Athens are sharing the same room and all are positive for hvCRKP. The carriers remain in the same room with dedicated nursing staff (patient and nurse cohorting). Contact precautions are implemented.

The hospital is asking further advice on managing the patients.



## SIMEX ROME 2018

### EXERCISE - EXERCISE - EXERCISE

Scenario date: 22 December  
Inject Number: 11a  
Time: 1330  
To who: Turkey only

It is 22 December.

The patient transferred from the Galliera hospital in Genoa, Italy to Turkey 10 days ago was a 62-year-old male who suffered from recurrent pelvic osteomyelitis. He is currently hospitalised in the ICU in the Central hospital in Izmir with fulminant sepsis, high fever and confusion having been transferred from a geriatric medicine ward in the same hospital when he became seriously ill. Active screening with rectal swabs has been initiated.

Three other Turkish nationals in the geriatric medicine ward are also found to be positive for hvCRKP by the string test. Contact precautions have been implemented.

The hospital is asking for further advice



## SIMEX ROME 2018

### EXERCISE - EXERCISE - EXERCISE

Scenario date: 22 December  
Inject Number: 11b  
Time: 1330  
To who: Portugal only

It is 22 December.

The patient transferred from the Galliera hospital in Genoa, Italy 10 days ago to Portugal was a 50-year-old male who suffered from recurrent pelvic osteomyelitis. He was originally hospitalised in a private hospital in Porto but following complications was transferred to the Centro Hospitalar Universitário do Porto and is presenting with the onset of fulminant sepsis, high fever and confusion.

He was sharing the ward in the private hospital with 6 other Portuguese nationals and 1 Spanish national and 3 (2 Portuguese, one Spanish) are positive for hvCRKP. Contact precautions have been implemented.

The hospital is asking for further advice on managing these patients.



## SIMEX ROME 2018

### EXERCISE - EXERCISE - EXERCISE

Scenario date: 22 December  
Inject Number: 12  
Time: 1330  
To who: Italy only

It is 22 December.

A screen of medical staff in the Galliera hospital has revealed that a Romanian nurse is colonised with the *Klebsiella pneumonia* strain. This nurse has recently arrived in Italy having previously worked in Romania for several years at the Spitalul Universitar de Urgență (University Hospital) Bucarest. The nurse has been in Italy for approximately three months and is currently working two jobs, one at the Galliera hospital and one at a private clinic specialising in plastic surgery. A highly respected Ukrainian plastic surgeon runs this clinic attracting many patients from his former country and from Croatia where he has a second clinic which he visits 1 week in 4 to conduct surgical procedures. He also has his original clinic in Kiev which he runs with his partner. Many Ukrainian patients have their initial consultation in this clinic in Kiev but the procedure is then carried out in the other two clinics before returning to Kiev for convalescence.

Scenario date: 22 December  
Inject Number: 13  
Time: 1345  
To who: Spain only

It is 22 December.

Whole genome sequencing (WGS) of the isolates has been performed at the reference laboratory in Spain. The results from six isolates from separate patients in Spain confirmed that the three initially identified in the ICU (28yo male and 26yo male who both died and the 41yo) shared the same hypervirulent genomic signature. This was K1-, *magA*-, *mpA*- and *mpA2*-positive, confirming the hypervirulent phenotype. The isolates were also confirmed as pandrug-resistant, producing the NDM-1 and OXA-48 carbapenemases, and expressing the *mcr-2* gene. In silico analysis of multilocus sequence typing (MLST) shows that the strain belongs to sequence type 23 (ST23). By core genome MLST (cgMLST) comparison the three isolates cluster within less than 8 allelic differences.

The other three isolates, which were identified later after a wider screen, were confirmed to be carbapenem-resistant but lacked hypervirulence genes and displayed more than 150 allelic differences from the three outbreak-related isolates.

No further patients or any staff have been detected in the Spanish hospital with *Klebsiella pneumoniae* infection or as carriers.



## SIMEX ROME 2018

### EXERCISE - EXERCISE - EXERCISE

Scenario date: 22 December  
Inject Number: 14  
Time: 14:00  
To who: Italy only

It is 22 December

Whole genome sequencing (WGS) of the hvCRKP isolates has been performed at the reference laboratory in Italy. All the isolates are K1-, *magA*-, *mpA*- and *mpA2*-positive, confirming the hypervirulent phenotype. The isolates are confirmed as pandrug-resistant, producing the NDM-1 and OXA-48 carbapenemases, and expressing the *mcr-2* gene. In silico analysis of multilocus sequence typing (MLST) shows that the strain belongs to sequence type 23 (ST23).





## SIMEX ROME 2018

### EXERCISE - EXERCISE – EXERCISE

Scenario date: 22 December  
Inject Number: 15  
Time: 14:00  
To who: Malta only

It is 22 December

The Maltese patient (60 yo male) is at home in Malta, having recently been in the Galliera hospital in Genoa, recovering from the orthopaedic operation but otherwise in good health. A screening culture is performed and he is positive for CRKP. The isolate is tested by the hospital laboratory and is confirmed to be hvCRKP by the “string test”.



## SIMEX ROME 2018

### EXERCISE - EXERCISE - EXERCISE

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Scenario date: 22 December  
Inject Number: 16  
Time: 14:00  
To who: ECDC

The team at ECDC have produced a RRA. This has not been shared with member states yet.

In addition Germany have offered to do WGS in support of countries that don't have that capability



## SIMEX ROME 2018

### EXERCISE - EXERCISE - EXERCISE

Scenario date: 22 December  
Inject Number: 17  
Time: 15:00  
To who: all

#### Audioconference

The outbreak of hvCRKP first detected in Spain seems to have the potential to have spread far more widely with potential for cases to emerge in many MS and beyond. To be able to share the latest information on this multi-country outbreak, an audioconference has been called.

This audioconference (simulated) for country representatives (1 per invited country) will be held at 15:30 at the tele-conference table and will be chaired by DG Sante C3. This should last no longer than 45 minutes.

In preparation for the t/c you should consider:

- reporting on what information you have on the outbreak if any
- what information you would like to have from involved MS and EU agencies
- what actions you have taken and what measures you are considering

All other participants are invited to observe the audioconference.



## SIMEX ROME 2018

### EXERCISE - EXERCISE - EXERCISE

Scenario date: 22 December  
Inject Number: 18  
Time: 15:30  
To who: One per person at t/c table

#### Audioconference Agenda

1. Welcome and introductions
2. Purpose of meeting
3. Update from ECDC – Rapid risk assessment
4. Update from affected country(s) – current situation
5. Tour de table – questions, comments, country specific response activities and measures being undertaken, requests for support
6. Next steps
7. AOB



## SIMEX ROME 2018

### EXERCISE - EXERCISE - EXERCISE

Scenario date: 26 December  
Inject Number: 19  
Time: 09:15  
To who: Italy, Croatia, Ukraine

It is 26 December 14 days after the initial cases were reported in Spain.

A plastic surgeon who operates a network of private reconstructive (plastic) surgery clinics in Genoa, Italy; Split, Croatia and Kiev, Ukraine is requesting advice and support. He has been advised one of his employees, a nurse working in acute care, has been identified as a carrier of the hvCRKP strain following a screen at the Galliera Hospital where she also works. He is seeking advice on what measures to take in his clinics. He is also concerned his business may be damaged if news of this incident leaks to the press.

Please provide advice on what measures to take by providing them in written form to exercise control by 1015.

How can the public be appropriately informed without impacting on the business of the plastic surgeon?



## SIMEX ROME 2018

### EXERCISE - EXERCISE – EXERCISE

Scenario date: 26 December  
Inject Number: 20  
Time: 09:15  
To who: Bulgaria

It is 26 December 14 days after the initial cases were reported in Spain.

Extensive screening in the Saint Ekaterina University Multiprofile Hospital has identified two cases of hvCRKP colonisation, one in a healthcare worker in a surgical ward and one in a patient in an orthopaedic ward, both by string test. Samples have been sent for whole genome sequencing and results are awaited. The hospital is requesting advice and support on what additional control measures to routine infection control to take.

Please provide advice on what measures to take by providing them in written form to exercise control by 1015.

*What is your media strategy now that possible cases have been found in your country?*



## SIMEX ROME 2018

### EXERCISE - EXERCISE - EXERCISE

Scenario date: 26 December  
Inject Number: 21  
Time: 09:15  
To who: Romania

It is 26 December 14 days after the initial cases were reported in Spain.

Extensive contact tracing and screening of patients who have attended as an inpatient at the Spitalul Universitar de Urgență (University Hospital) Bucharest and who came into contact with the nurse carrying hvCRKP has begun. One case who was treated by the nurse, fully recovered, and returned to their geriatric nursing home, but later died of sepsis, is of particular interest. The hospital is requesting advice and support on what additional control measures to standard infection control are being recommended and the nursing home is also asking for advice on measures as a precaution whilst screening results are awaited.

Please provide advice on what measures to take by providing them in written form to exercise control by 1015.

*What is your media strategy given that possible cases may be found in your country?*



## SIMEX ROME 2018

### EXERCISE - EXERCISE - EXERCISE

Scenario date: 26 December  
Inject Number: 22  
Time: 09:15  
To who: Portugal and Spain only

It is 26 December 14 days after the initial cases were reported in Spain.

A Spanish patient in a private hospital in Porto, Portugal has told the hospital that he wishes to return home to his geriatric residential home near Salamanca, Spain. It was confirmed 4 days ago that he is carrying the hvCRKP strain. The nursing home are requesting advice and support from the hospital on what control measures are recommended and for how long these control measures need to be in place. The hospital is unsure what to say and have contacted both Spanish and Portuguese authorities to advise them of the situation.

Please provide advice on what measures to take by providing them in written form to exercise control by 1015.

*What is your media strategy should information around this case be leaked to the press?*





## SIMEX ROME 2018

### EXERCISE - EXERCISE - EXERCISE

Scenario date: 26 December  
Inject Number: 23  
Time: 0915  
To who: Greece; Montenegro; Albania

It is 26 December.

The Greek patient with fulminant sepsis and positive for hvCRKP hospitalised in a private hospital in Athens has sadly died. The Albanian and Montenegrin patients who had been sharing the same room and are now carrying the hvCRKP strain are insisting on returning to their home countries immediately and have been in touch directly with their embassies. The private hospital in Athens is looking for advice on what actions to take. The embassies are also seeking information to support their citizens repatriation.

Please provide advice on what actions you are taking and provide them in written form to exercise control by 1015.

*What is your media strategy should information around these cases be leaked to the press?*



## SIMEX ROME 2018

### EXERCISE - EXERCISE - EXERCISE

Scenario date: 26 December  
Inject Number: 24  
Time: 09:15  
To who: Turkey only

It is 26 December.

Two patients in a geriatric medicine ward the Central hospital in Izmir, both positive for hvCRKP by the string test with the results from further confirmatory tests linking them to the wider outbreak reported in Italy and Spain awaited, are about to be discharged. One is returning to his village of Yeni Foça to work in the family hotel and restaurant. The other is returning to his residential home which he shares with 80 other residents over the age of 70.

The residential home and the local health centre in Yeni Foça are asking for advice on what measures to take and for how long?

Please provide advice on what measures to take, providing them in written form to exercise control by 1015.

*What is your media strategy should information around these cases be leaked to the press?*



## SIMEX ROME 2018

### EXERCISE - EXERCISE - EXERCISE

Scenario date: 26 December  
Inject Number: 25  
Time: 09:15  
To who: Malta only

It is 26 December.

The wife of the Maltese national (34 yo male), who remains in ICU in the Galliera hospital, is found to be carrying the hypervirulent CRKP strain by WGS. She is 36 weeks pregnant. It has been a difficult pregnancy and her obstetrician is planning for a caesarian section due to her pre-eclampsia in the coming days. The maternity hospital is looking for advice.

Please provide advice on what measures to take, providing them in written form to exercise control by 1015.

*What is your media strategy should information around these cases be leaked to the press?*



## SIMEX ROME 2018

### EXERCISE - EXERCISE - EXERCISE

Scenario date: 3 January 2019  
Inject Number: 26  
Time: 11am  
To who: Portugal only

It is 3 January 2019

Two patients with upper urinary tract infection and secondary bacteraemia caused by extensively drug-resistant *Salmonella enterica* serovar Kentucky (producing the VIM-2 carbapenemase) have been identified in Portugal. The first patient was a 38-year-old woman in the postpartum period and the second a 62 year-old man with kidney stones. Both cases were linked to a small outbreak of gastroenteritis in the hospital. An epidemiological investigation has identified a ward nurse carrying this *Salmonella* strain who had travelled to Bulgaria the previous month to visit her family and on return had an episode of mild self-limiting gastroenteritis.