(= UTI-I)

INFECTION IMPORTED

# **Annex 4. Case definitions of infections**



# Healthcare-associated infections and antimicrobial use in European long-term care facilities (HALT-3)

#### **CASE DEFINITIONS OF INFECTIONS**

#### **IMPORTANT REMARK:**

All **active infections** present on the day of the survey should be reported. An infection is **active** when signs/symptoms of the infection are present on the survey date **OR** signs/symptoms were present in the past and the resident is (still) receiving treatment for that infection on the survey date. The presence of symptoms and signs in the two weeks (14 days) preceding the PPS day should be verified in order to determine whether the treated infection matches one of the case definitions. Infections can only be reported as 'imported' for residents recently transferred from another healthcare facility (i.e. hospital or other LTCF) and still treated for an infection on the PPS day in the absence of documentation on (all) signs/symptoms that were present in the past.

- \* Fever: 1) single > 37.8°C oral/tympanic membrane or 2) repeated > 37.2°C oral or > 37.5°C rectal or 3) > 1.1°Cover baseline from any site (oral, tympanic, axillary)
- \*\* Leucocytosis: 1) Neutrophilia > 14,000 leucocytes/mm3 or 2) left shift (>6% bands or ≥ 1500 bands/mm3)
- § Acute change in mental status from baseline: Acute onset + fluctuating course + inattention AND either disorganized thinking or altered level of consciousness
- SS Acute functional decline: New 3 point increase in total ADL score (Range 0-28) from baseline based on 7 ADL items (bed mobility, transfer, locomotion, dressing, toilet use, personal hygiene, eating) each scored from 0 (independent) 4 (total dependence) OR increased dependency defined by scales other than ADL

#### **URINARY TRACT INFECTIONS** ☐ Resident without a urinary catheter ☐ Resident with a urinary catheter SIGNS/SYMPTOMS SIGNS/SYMPTOMS AT LEAST **ONE** OF THE FOLLOWING (1, 2 or 3) CRITERIA: AT LEAST ONE OF THE FOLLOWING (1, 2, 3 or 4) CRITERIA: 1 Acute dysuria OR acute pain/swelling or tenderness of the 1 Fever\*, rigors, OR new onset hypotension with NO testes, epididymis, or prostate alternate site of infection 2 Fever\* OR leukocytosis\*\* 2 Acute change mental status § OR acute functional decline §§ with NO alternate diagnosis AND One or more of the following: leukocytosis\*\* Acute costovertebral angle pain ☐ 3 New onset suprapubic or costovertebral angle pain or Suprapubic pain/tenderness tenderness Gross hematuria 4 Purulent discharge around catheter or acute pain, New or marked increase in frequency swelling or tenderness of testes, epididymis, or prostate New or marked increase in urgency New or marked increase in incontinence 3 Two or more (in the absence of fever or leucocytosis): Frequency (new/increased) Suprapubic pain Urgency (new/increased) Gross hematuria ☐ Incontinence (new/increased) **URINE CULTURE** ■ Not done, negative or test results unknown URINE CULTURE ☐ Urine culture done AND: Not Done, negative or test results unknown At least 10<sup>5</sup> cfu/ml of any organism(s) in a urinary Urine culture done AND: catheter specimen At least $\overline{10^5}$ cfu/ml of no more than 2 species of microorganisms in a voided urine sample <u>OR</u> At least 10<sup>2</sup> cfu/ml of any number of organisms in a specimen collected by in-and-out catheter INFECTION CONFIRMATION Signs/symptoms **AND** urine culture positive: INFECTION CONFIRMED (= UTI-C) Signs/symptoms AND urine culture not done, negative or results unknown: INFECTION PROBABLE (= **UTI-P**)

Infection treated on PPS day but no documentation of signs/symptoms

(hospital or other LTCF infections only)

### **RESPIRATORY TRACT INFECTIONS**

COMMON COLD or PHARYNGITIS	FLU diagnosis can be made also outside the Flu season
AT LEAST <u>TWO</u> OF THE FOLLOWING CRITERIA:	<b>BOTH</b> OF THE FOLLOWING CRITERIA MUST BE MET:
□ Runny nose or sneezing □ Stuffy nose (i.e. congestion) □ Sore throat or hoarseness or difficulty in swallowing □ Dry cough □ Swollen or tender glands in the neck (cervical lymphadenopathy)	Fever (for definition see top of page 1)  AND  At least three of the following:  Chills  New headache or eye pain  Myalgias or body aches  Malaise or loss of appetite  Sore throat  New or increased dry cough
<b>▼</b> INFECTION CONFIRMATION	THEFECTION CONFIDMATION
_	INFECTION CONFIRMATION
☐ Infection criteria fully met: INFECTION CONFIRMED  (= COLD-C) ☐ Infection treated on PPS day but no documentation of signs/symptoms: INFECTION IMPORTED  (hospital or other LTCF only) (= COLD-I)	☐ Infection criteria fully met: INFECTION CONFIRMED  (= FLU-C) ☐ Infection treated on PPS day but no documentation of signs/symptoms: INFECTION IMPORTED  (hospital or other LTCF only) (= FLU-I)
LOWER RESPIRATORY TRACT INFECTIONS  Resident with a POSITIVE chest x-ray for pneumonia or a new infiltrate	Resident <u>without</u> a POSITIVE chest x-ray for pneumonia or a new infiltrate OR chest x-ray not done
<b>↓</b>	<b>↓</b>
<u>SIGNS/SYMPTOMS</u>	<u>SIGNS/SYMPTOMS</u>
BOTH OF THE FOLLOWING CRITERIA MUST BE MET:  At least one of respiratory signs or symptoms:  New or increased cough  New/increased sputum production  0₂ saturation < 94% or reduced > 3% from baseline  Abnormal lung examination (new or changed)  Pleuritic chest pain  Respiratory rate ≥ 25 breaths/min  AND  One or more constitutional signs/symptoms (fever, leucocytosis, confusion, acute functional decline; for definitions see top of page 1 §§)	BOTH OF THE FOLLOWING CRITERIA MUST BE MET:  At least two of respiratory signs or symptoms:  New or increased cough  New/increased sputum production  O₂ saturation < 94% or reduced >3% from baseline  Abnormal lung examination (new or changed)  Pleuritic chest pain  Respiratory rate ≥ 25 breaths/min  AND  One or more constitutional signs/symptoms (fever, leucocytosis, confusion, acute functional decline; for definitions see top of page 1 §§)
Absence of other conditions such as chronic h	earth failure that could account for symptoms
INFECTION CONFIDMATION	INFECTION CONFIRMATION
<ul> <li>INFECTION CONFIRMATION</li> <li>□ Signs/symptoms criteria met AND chest x-ray positive:         PNEUMONIA INFECTION CONFIRMED (= PNEU-C)</li> <li>□ Infection treated on PPS day but no documentation of signs/symptoms (hospital or other LTCF only):         PNEUMONIA INFECTION IMPORTED (= PNEU-I)</li> </ul>	INFECTION CONFIRMATION  Infection criteria fully met:  OTHER LOWER RTI CONFIRMED (= LRTI-C)  Infection treated on PPS day but no documentation of signs/symptoms (hospital or other LTCF only):  OTHER LOWER RTI IMPORTED (= LRTI-I)

### **SKIN INFECTIONS**

CELLULITIS/SOFT TISSUE/WOUND INFECTIONS	SCABIES
ONE OF THE FOLLOWING (1 or 2) CRITERIA MUST BE MET:  1 Pus at a wound, skin, or soft tissue site  2 Four or more new or increasing signs/symptoms at affected site:  Heat  Tenderness or pain Redness Serous drainage Swelling One constitutional sign/symptom (fever, leucocytosis, confusion, acute functional decline;	BOTH OF THE FOLLOWING CRITERIA MUST BE MET:  ☐ Maculopapular and/or itching rash AND ☐ At least one of the following: ☐ Physician diagnosis ☐ Laboratory confirmation (positive scraping or biopsy) ☐ Epidemiological linkage to a case of scabies with lab confirmation
for definitions see top of page 1)  INFECTION CONFIRMATION	INFECTION CONFIRMATION
☐ Infection criteria fully met: INFECTION CONFIRMED  (= SKIN-C) ☐ Infection treated on PPS day but no documentation of signs/symptoms: INFECTION IMPORTED  (hospital or other LTCF only) (= SKIN-I)	☐ Infection criteria fully met: INFECTION CONFIRMED  (= SCAB-C) ☐ Infection treated on PPS day but no documentation of signs/symptoms: INFECTION IMPORTED (hospital or other LTCF only) (= SCAB-I)
NOTE: If the infection matches one of the Surgical Site Infection (SSI) definitions, please give priority to the SSI. Do not apply another case definition for the same infection.	
HERPES SIMPLEX OR ZOSTER INFECTION	FUNGAL INFECTION
<b>BOTH</b> OF THE FOLLOWING CRITERIA MUST BE MET:	<b>BOTH</b> OF THE FOLLOWING CRITERIA MUST BE MET:
A vesicular rash	☐ Characteristic rash or skin lesions  AND
Physician diagnosis or laboratory confirmation	Physician diagnosis or lab confirmed fungal pathogen from scraping or biopsy
$\downarrow$	•
<ul> <li>INFECTION CONFIRMATION</li> <li>☐ Infection criteria fully met: INFECTION CONFIRMED (= HERP-C)</li> <li>☐ Infection treated on PPS day but no documentation of signs/symptoms: INFECTION IMPORTED (hospital or other LTCF only) (= HERP-I)</li> </ul>	<ul> <li>INFECTION CONFIRMATION</li> <li>☐ Infection criteria fully met: INFECTION CONFIRMED         (= FUNG-C)</li> <li>☐ Infection treated on PPS day but no documentation of signs/symptoms: INFECTION IMPORTED (hospital or other LTCF only) (= FUNG-I)</li> </ul>

#### SURGICAL SITE INFECTIONS

Infection occurs within 30 days after the operation if no implant is left in place, or within three months if implant is in place

#### SUPERFICIAL INCISIONAL **DEEP INCISIONAL** ORGAN/SPACE **BOTH** OF THE FOLLOWING CRITERIA **BOTH** OF THE FOLLOWING **BOTH** OF THE FOLLOWING CRITERIA CRITERIA MUST BE MET: MUST BE MET: MUST BE MET: Infection involves only skin and Infection appears to be related Infection appears to be related to subcutaneous tissue of the to the operation and infection the operation and infection involves deep soft tissue (e.g. involves any part of the anatomy incision AND fascia, muscle) of the incision (e.g. organs and spaces) other AND than the incision which was At least **one** of the following: ☐ Purulent drainage with or At least **one** of the following: opened or manipulated during an operation without laboratory □ Purulent drainage from the confirmation, from the deep incision but not from the **AND** At least one of the following: superficial incision organ/space component of Organisms isolated from an ☐ Purulent drainage from a drain the surgical site aseptically obtained culture of that is placed through a stab A deep incision spontaneously fluid or tissue from the wound into the organ/space dehisces or is deliberately superficial incision ☐ Organisms isolated from an opened by a surgeon when At least one of the following the patient has at least one of aseptically obtained culture of signs or symptoms of fluid or tissue in the the following signs or infection: symptoms: fever (> 38 °C), organ/space Tenderness or pain localised pain or tenderness, ☐ An abscess or other evidence Localised swelling П of infection involving the unless incision is culture-Redness organ/space that is found on negative. □ Heat direct examination, during ☐ An abscess or other evidence Superficial incisional SSI reoperation, or by of infection involving the deep made by a surgeon or histopathologic or radiologic incision is found on direct attending physician examination examination, during ☐ Diagnosis of organ/space SSI reoperation, or by made by a surgeon or histopathologic or radiologic attending physician examination. □ Diagnosis of deep incisional SSI made by a surgeon or attending physician INFECTION CONFIRMATION INFECTION CONFIRMATION **INFECTION CONFIRMATION** ☐ Infection criteria fully met: ☐ Infection criteria fully met: Infection criteria fully met: INFECTION CONFIRMED INFECTION CONFIRMED INFECTION CONFIRMED (= SSSI-C) (= DSSI-C) (= OSSI-C) ☐ Infection treated on PPS day but ☐ Infection treated on PPS day but ☐ Infection treated on PPS day but no documentation of signs/ no documentation of signs/ no documentation of signs/ symptoms (hospital or other symptoms (hospital or other symptoms (hospital or other LTCF only):

INFECTION IMPORTED

(= SSSI-I)

If the infection matches one of the Surgical Site Infection (SSI) definitions, please give priority to the SSI. Do not apply another case definition for the same infection.

(= DSSI-I)

INFECTION IMPORTED

LTCF only):

INFECTION IMPORTED

(= OSSI-I)

LTCF only):

## **EYE, EAR, NOSE AND MOUTH INFECTIONS**

CONJUNCTIVITIS	EAR
ONE OF THE FOLLOWING (1, 2 or 3) CRITERIA MUST BE MET:  □ 1 Pus appearing from one or both eyes, present for at least 24 hours □ 2 New or increased conjunctival erythema, with or without itching □ 3 New or increased conjunctival pain, present for at least 24 hours  Symptoms must not be due to allergy or trauma to the conjunctiva	ONE OF THE FOLLOWING (1 or 2) CRITERIA MUST BE MET:  □ 1 Diagnosis by a physician of any ear infection □ 2 New drainage from one or both ears (non-purulent drainage must be accompanied by additional symptoms, such as ear pain or redness)
INFECTION CONFIDMATION	<b>↓</b>
<ul> <li>Infection criteria fully met: INFECTION CONFIRMED</li></ul>	<ul> <li>INFECTION CONFIRMATION</li> <li>☐ Infection criteria fully met: INFECTION CONFIRMED         (= EAR-C)</li> <li>☐ Infection treated on PPS day but no documentation of signs/symptoms: INFECTION IMPORTED         (hospital or other LTCF only) (= EAR-I)</li> </ul>
SINUSITIS	ORAL CANDIDIASIS
☐ Sinusitis diagnosed by physician	BOTH OF THE FOLLOWING CRITERIA MUST BE MET:  Presence of raised white patches on inflamed mucosa OR plaques on oral mucosa  AND  Diagnosed by a dentist or a physician
•	
<u>INFECTION CONFIRMATION</u>	<u>INFECTION CONFIRMATION</u>
☐ Infection criteria fully met: INFECTION CONFIRMED  (= SINU-C) ☐ Infection treated on PPS day but no documentation of signs/symptoms: INFECTION IMPORTED (hospital or other LTCF only) (= SINU-I)	☐ Infection criteria fully met: INFECTION CONFIRMED  (= ORAL-C) ☐ Infection treated on PPS day but no documentation of signs/symptoms: INFECTION IMPORTED  (hospital or other LTCF only) (= ORAL-I)  =

### **GASTROINTESTINAL INFECTIONS**

GASTROENTERITIS	CLOSTRIDIUM DIFFICILE INFECTION
ONE OF FOLLOWING (1, 2 or 3) CRITERIA MUST BE MET:  □ 1 Diarrhoea, three or more liquid or watery stools above normal baseline for the resident in 24-hr period □ 2 Vomiting, two or more episodes in 24-hr period □ 3 Both of the following: □ Positive stool specimen for bacterial or viral pathogen AND □ At least one of the following: nausea, vomiting, abdominal pain or tenderness, diarrhoea	ONE OF FOLLOWING (1, 2 or 3) CRITERIA MUST BE MET:  □ 1 Diarrhoeal stools or toxic megacolon AND  a positive laboratory assay for C. difficile toxin A and/or  B in stools or a toxin-producing C. difficile organism  detected in stool via culture or other means e.g. a  positive PCR result  □ 2 Pseudomembranous colitis revealed by lower gastro- intestinal endoscopy  □ 3 Colonic histopathology characteristic of C. difficile infection (with or without diarrhoea) on a specimen obtained during endoscopy or colectomy
$\downarrow$	<b>↓</b>
<u>INFECTION CONFIRMATION</u> ☐ Infection criteria fully met: INFECTION CONFIRMED	<u>INFECTION CONFIRMATION</u> ☐ Infection criteria fully met: INFECTION CONFIRMED
☐ Infection treated on PPS day but no documentation of signs/symptoms:  (hospital or other LTCF only) (= GE-I)	☐ Infection treated on PPS day but no documentation of signs/symptoms:  (hospital or other LTCF only)  (CDI-C)  (FORTERFIED  (FORTERFI
BLOODSTREAM INFECTIONS  ONE OF THE FOLLOWING (1 or 2) CRITERIA MUST BE MET:  1 Two or more blood cultures positive for the same organism  2 A single blood culture documented with an organism thought not to be a contaminant	UNEXPLAINED FEVER  ☐ The resident must have documentation in the medical record of fever (for definition see top of page 1) on two or more occasions at least 12 hours apart in any 3-day period, with no known infectious or non-infectious cause
AND  At least <u>one</u> of the following:  Fever (for definition see top of page 1)  New hypothermia (<34.5° C, or does not register on the thermometer being used)  A drop in systolic blood pressure of >30 mm Hg from baseline  Worsening mental or functional status	INFECTION CONFIRMATION  ☐ Infection criteria fully met: INFECTION CONFIRMED  (= FUO-C)  ☐ Infection treated on PPS day but no documentation of signs/symptoms: INFECTION IMPORTED  (hospital or other LTCF only) (= FUO-I)
	OTHER INFECTION(C)
<ul> <li>INFECTION CONFIRMATION</li> <li>☐ Infection criteria fully met: INFECTION CONFIRMED         (= BSI-C)</li> <li>☐ Infection treated on PPS day but no documentation of signs/symptoms: INFECTION IMPORTED (hospital or other LTCF only) (= BSI-I)</li> </ul>	OTHER INFECTION(S)  Please specify (= OTHER)