

WardWatcher (2020 Version)

HAI Data Collection.

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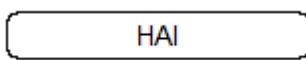
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1 DATA COLLECTION USING WARDWATCHER

1.1 Collecting data using WardWatcher

The data required for surveillance of Intensive Care Unit Acquired Infection (ICUAI) can be collected via WardWatcher. Infection data is captured within the “HAI” window in WardWatcher, other data items required for surveillance form part of the normal dataset for ICU and HDU audit purposes and will be populated from history and ACP pages. All required data items are listed in Appendix I. All relevant infections should be entered from day 3 in the unit.

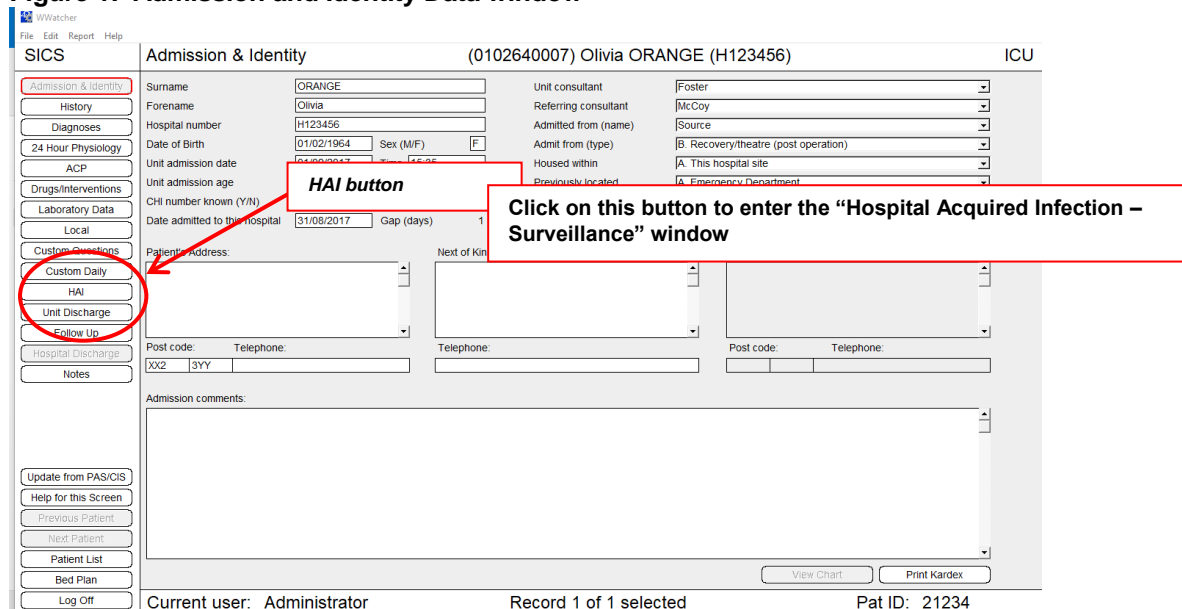
1.2 Entering the “HAI” Page



To enter the “HAI” window, select the “HAI”

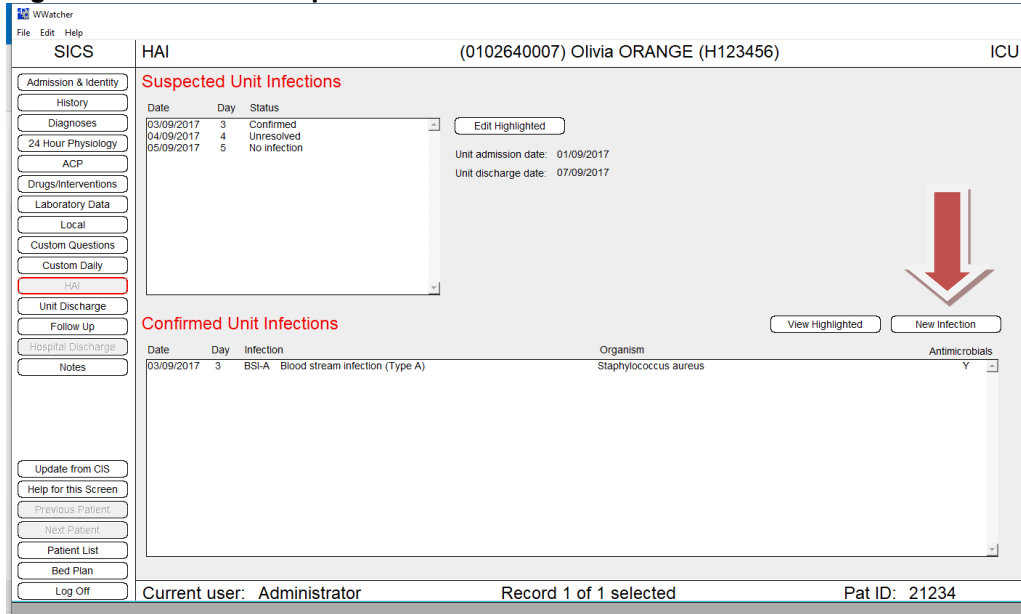
button left hand side of any page as shown in Figure 1.

Figure 1: Admission and Identity Data window



On selecting the “HAI” button the “Healthcare Acquired Infection – Surveillance” window appears as shown in Figure 2.

Figure 2: Healthcare Acquired Infection – Surveillance window



1.3 Healthcare Acquired Infection – Surveillance window

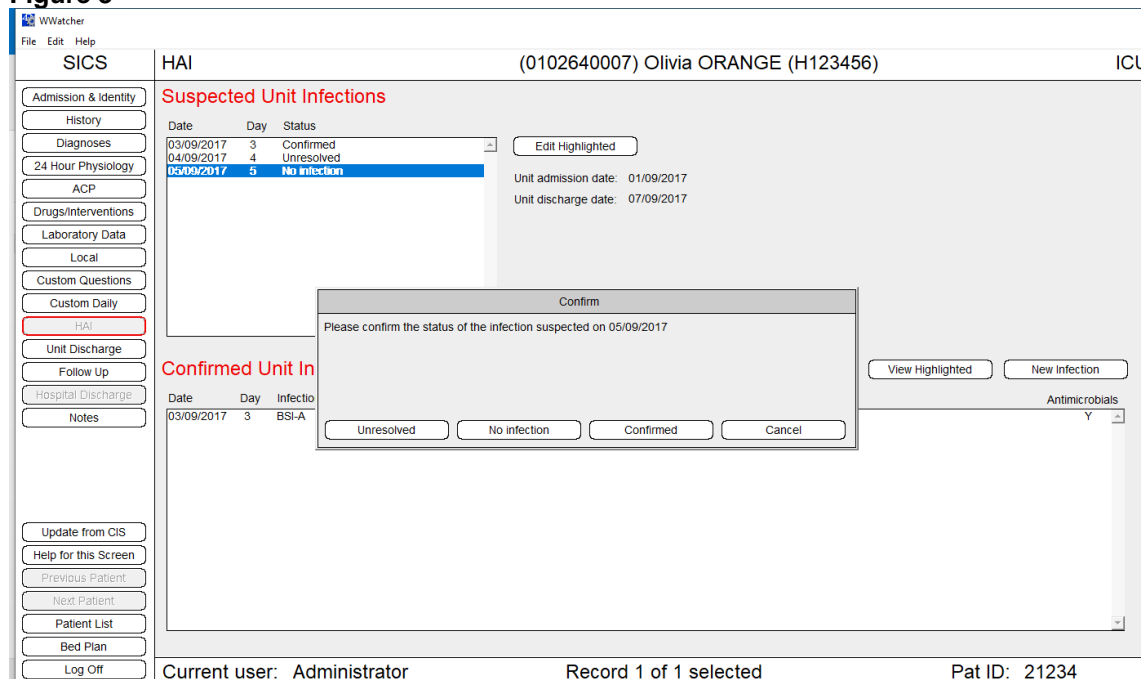
The upper part of the Healthcare Acquired Infection - Surveillance window shown in Figure 2 will show the dates that samples have been sent for a possible VAP, CVC or BSI related to a CVC – the samples for this can be a swab, line tip for central venous catheter infection or blood culture in the case of Blood stream infection.

The lower part of the window in Figure 2 shows a summary of any infections diagnosed according to the ECDC infection definitions during the patient stay in the critical care unit.

New infections can be added by clicking on the highlighted new infection button even if there is no date in the suspected unit infections .

2 SECTION 2:

Figure 3



2.1 HAI SUSPECTED UNIT INFECTIONS: for every date entered there are 3 options:

1. Unresolved - if you are unable to confirm there is a healthcare acquired infection- this information should be completed when the appropriate results come back.
2. No infection- confirmed there is no HAI.
3. Infection is confirmed and the infection must be entered.

You will not be able to discharge the patient until all of the dates have a response.

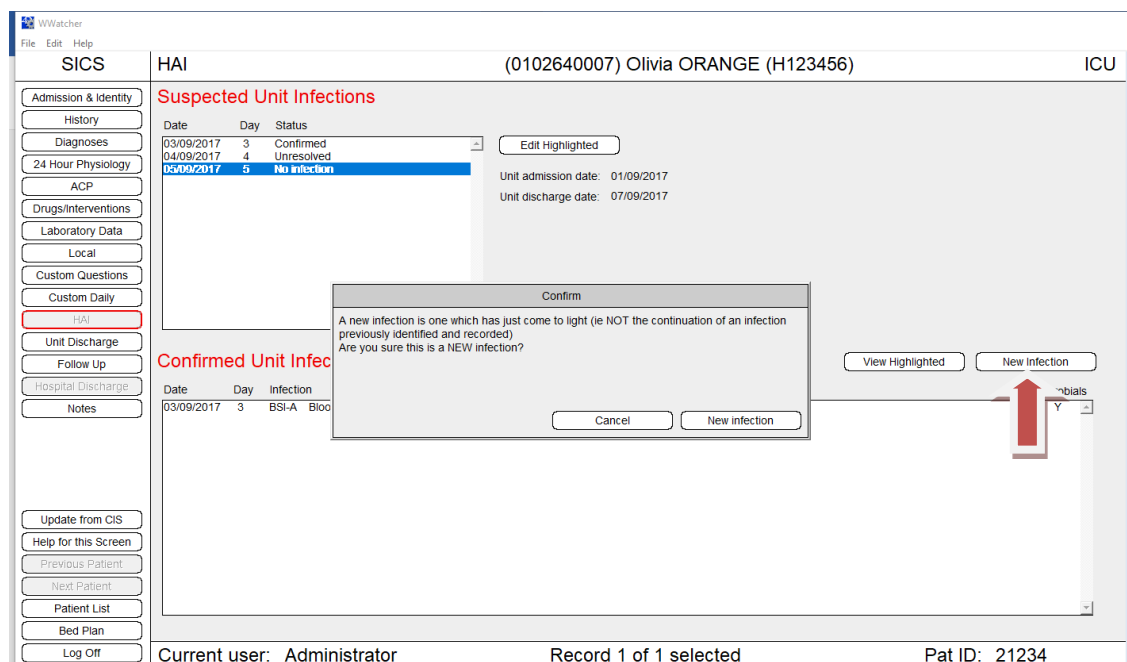
Please note:

If samples have been sent on more than one day for the same suspected infection – the infection will be recorded on the first date the samples were sent/symptoms appeared. Any subsequent dates for that infection should be marked no infection as they are not a new infection.

2.2 HAI confirmed.

If an infection is diagnosed/suspected then click on the “new infection” button to enter the details.

Figure 4.



3 Entering Infection Details

3.1 Entering Infection Details

When the “New Infection” button is selected a box appears on the screen asking for confirmation that this is a new infection - shown in Figure 5. If it is a new infection the user clicks the “New Infection” button to move on and if not the user clicks cancel to return to the HAI surveillance screen.

If the “New Infection” button is selected, a new window appears, as shown in Figure 4.

The infection type e.g. BSI, CVC related infection and Pneumonia can be selected at the top of the window in Figure 6.

***An infection should be recorded as the day it was first diagnosed clinically, not the date the results come back positive .**

NB: According to ECDC definitions a BSI and CVC related infection require positive microbiology, therefore these data will have to be entered retrospectively once lab results have been received.

Figure 5: Infection details window

On selecting the infection type suspected, a list of infection criteria required to make a diagnosis according to the ECDC protocol appear on screen. Details of the signs, symptoms and laboratory test results of the infection for the selected patient can be entered.

The screenshot shows the 'WWatcher' application window. At the top, it displays 'Healthcare Associated Infection' for patient '(0102640007) Olivia ORANGE (H123456)' in the 'ICU' ward. The date is set to '05/09/2017'. There are 'Delete...', 'Cancel', and 'Save' buttons on the right side.

1. Identify suspected infection

Radio buttons are present for: Blood stream infection, CVC related infection (NOT blood stream), and Pneumonia.

2. Check if an ECDC confirmed infection

A text field contains 'No infection confirmed' and a 'Check' button is to its right.

3. Select the causative organism(s) (with resistance, if appropriate)

Radio buttons are present for: Identified below, Examination not done, Not found / not identified / cannot be classified, and Sterile examination (eg -ve culture).

Below these are three columns: 'Organism', 'Group', and 'Resistance', each with a dropdown menu. A large empty table area is provided for recording data.

At the bottom, there are three rows for highlighting organisms as causative:

- highlighted as causative organism 1:
- highlighted as causative organism 2:
- highlighted as causative organism 3:

At the very bottom, it shows 'Current user: Administrator' and 'Pat ID: 21234'.

3.2 Recording a BSI

If a BSI is suspected the user ticks the “BSI” box and a list of possible infection criteria appear on the screen.

When all presenting signs and symptoms for the infection have been recorded the “Check” button shown in Figure 6 should be selected. On checking the infection criteria the “Confirmed Infection” is displayed.

The lower part of the infection detail window (3.) shown in Figure 6 allows the organism (and antimicrobial resistance for certain organisms) to be recorded.

Figure 6. Infection details window

The type of infection is selected e.g. BSI

Healthcare Associated Infection (0102640007) Olivia ORANGE (H123456) ICU

1. Identify suspected infection

Blood stream infection CVC related infection (NOT blood stream) Pneumonia

Date: 03/09/2017

Positive blood culture for recognised pathogen Causative organism ALSO isolated from ANOTHER infection site (Y/N)

Temperature more than 38 C (Y/N) 2 positive blood cultures for common skin contaminant* (from 2 separate blood samples drawn within 48 hours) & clinical symptoms (Y/N)

Chills (Rigors) (Y/N)

Hypotension (Y/N)

* skin contaminants = coagulase-negative staphylococci, Micrococcus sp., Propionibacterium acnes, Bacillus sp., Corynebacterium sp.

No CVC in situ & none in last 48 hours
 CVC removed within last 48 hours
 CVC currently in situ

2. Check if an ECDC confirmed infection

Confirmed infection:

3. Select the causative organism(s) (with resistance, if appropriate)

Identified below Examination not done Not found / not identified / cannot be classified Sterile examination (eg -ve culture)

Organism	Group	Resistance
Achromobacter sp.	Gram negative bacilli	
Acinetobacter baumannii	Gram negative bacilli	
Acinetobacter calcoaceticus	Gram negative bacilli	
Acinetobacter haemolyticus	Gram negative bacilli	
Acinetobacter lwoffii	Gram negative bacilli	
Acinetobacter sp. (Not specified)	Gram negative bacilli	
Acinetobacter sp. (Other)	Gram negative bacilli	
Actinomyces sp.	Other bacteria	

highlighted as causative organism 1:

highlighted as causative organism 2:

highlighted as causative organism 3:

Current user: Administrator Pat ID: 21234

Infection criteria for BSI

Check button

Infection code and type displayed

N.B. For BSI, the user is asked to provide information on CVC status in order to determine whether the BSI is CVC related or not. If the required criteria are selected (CVC present within last 48hrs) a new set of criteria will appear on the screen and the user must complete these before selecting "Check". This is shown in Figure 7.

Figure 7: Infection details window- CVC related BSI criteria

Healthcare Associated Infection (U102640007) Olivia ORANGE (H123456) ICU

1. Identify suspected infection

Blood stream infection CVC related infection (NOT blood stream) Pneumonia

Date: 03/09/2017

Positive blood culture for recognised pathogen Causative organism ALSO isolated from ANOTHER infection site (Y/N)

Temperature more than 38 C (Y/N) 2 positive blood cultures for common skin contaminant* (from 2 separate blood samples drawn within 48 hours) & clinical symptoms (Y/N)

Chills (Rigors) (Y/N)

Hypotension (Y/N)

* skin contaminants = coagulase-negative staphylococci, Micrococcus sp., Propionibacterium acnes, Bacillus sp., Corynebacterium sp.

Positive culture with the SAME ORGANISM:
 Quantitative CVC culture >=10³ CFU/ml or semi-quantitative CVC culture >15 CFU (Y/N)
 Quantitative blood culture ratio (CVC blood sample/peripheral blood sample) > 5 (Y/N)
 Differential delay of positivity of blood cultures (CVC blood sample culture positive 2 hrs or less before peripheral blood culture (blood samples drawn same time) (Y/N)
 Positive culture with the SAME ORGANISM from pus from insertion site (Y/N)

No CVC in situ & none in last 48 hours
 CVC removed within last 48 hours
 CVC currently in situ

2. Check if an ECDC confirmed infection

Confirmed infection:

3. Select the causative organism(s) (with resistance, if appropriate)

Identified below Examination not done Not found / not identified / cannot be classified Sterile examination (eg -ve culture)

Organism	Group	Resistance
Achromobacter sp.	Gram negative bacilli	
Acinetobacter baumannii	Gram negative bacilli	
Acinetobacter calcoaceticus	Gram negative bacilli	
Acinetobacter haemolyticus	Gram negative bacilli	
Acinetobacter lwoffii	Gram negative bacilli	
Acinetobacter sp. (Not specified)	Gram negative bacilli	
Acinetobacter sp. (Other)	Gram negative bacilli	
Actinomyces sp.	Other bacteria	

highlighted as causative organism 1:

highlighted as causative organism 2:

highlighted as causative organism 3:

Infection criteria for CVC related BSI

If the signs, symptoms and laboratory tests selected do not meet the criteria to diagnose an ECDC ICU acquired infection a box will appear and advise the user of this, as shown in Figure 8. Click on OK and then cancel to re-enter the HAI daily details page. Change Y to N for new infection diagnosed today and click ok. **REMEMBER: If no microbiology results yet received go back and enter infection criteria once results received.**

In order to answer the quantitative questions which require a cfu result you may need to speak to microbiology as most hospitals do not get this routinely reported – samples generally say heavy growth /moderate growth /minimal growth.

Figure 8: Infection Details window- criteria for infection not met

Healthcare Associated Infection (0102640007) Olivia ORANGE (H123456) ICU

1. Identify suspected infection

Blood stream infection
 CVC related infection (NOT blood stream)
 Pneumonia

Positive blood culture for recognised pathogen
 Causative organism ALSO isolated from ANOTHER infection site (Y/N)

Temperature more than 38 C (Y/N)
 2 positive blood cultures for common skin contaminant* (from 2 separate blood samples drawn within 48 hours) & clinical symptoms (Y/N)

Chills (Rigors) (Y/N)

Hypotension (Y/N)

* skin contaminants = coagulase-negative staphylococci, Micrococcus sp., Propionibacterium acnes, Bacillus sp., Corynebacterium sp.

No CVC in situ & none in last 48 hours
 CVC removed within last 48 hours
 CVC currently in situ

2. Check if an ECDC confirmed infection

Confirmed infection: Blood stream infection (T)

3. Select the causative organism(s)

Identified below
 Examination not done

Organism

Achromobacter sp.	Gram negative bacilli
Acinetobacter baumannii	Gram negative bacilli
Acinetobacter calcoaceticus	Gram negative bacilli
Acinetobacter haemolyticus	Gram negative bacilli
Acinetobacter lwoffii	Gram negative bacilli
Acinetobacter sp. (Not specified)	Gram negative bacilli
Acinetobacter sp. (Other)	Gram negative bacilli
Actinomyces sp.	Other bacteria

highlighted as causative organism 1:

highlighted as causative organism 2:

highlighted as causative organism 3:

Date:

Alert

This patient does NOT have a blood stream infection according to the ECDC definitions

If the criteria do not meet those required by ECDC for infection diagnosis this message will appear

Current user: Administrator Pat ID: 21234

3.3 Diagnosing a pneumonia

Figure 9 shows criteria required for a **pneumonia** diagnosis. If criteria are met a window requesting details of microbiological tests appears, as shown in Figure 10.

Figure 9: Infection details window- Pneumonia

Healthcare Associated Infection
(0102640007) Olivia ORANGE (H123456)
ICU

1. Identify suspected infection

Blood stream infection
 CVC related infection (NOT blood stream)
 Pneumonia

Temperature more than 38 C with no other cause (Y/N)

WBC less than 4.0 (10⁹/L) or more than 12.0 (10⁹/L) (Y/N)

New onset of purulent sputum or change in character of sputum (colour, odour, quantity, consistency) (Y/N)

Cough, dyspnoea, or tachypnoea (Y/N)

Suggestive auscultation (rales or bronchial breath sounds), ronchi, wheezing (Y/N)

Worsening gas exchange (eg O2 desaturation, increased O2 requirements, increased ventilation demand) (Y/N)

Patient has underlying cardiac or pulmonary disease (Y/N)

2 or more serial chest X-rays/CT scans with a suggestive image of pneumonia (Y/N)

Single definitive chest X-ray/CT scan (Y/N)

Invasive respiratory device present (even intermittently) in last 48 hours (Y/N)

2. Check if an ECDC confirmed infection

Confirmed infection:

3. Select the causative organism(s) (with resistance, if appropriate)

Identified below
 Examination not done
 Not found / not identified / cannot be classified
 Sterile examination (eg -ve culture)

Organism	Group	Resistance

highlighted as causative organism 1:

highlighted as causative organism 2:

highlighted as causative organism 3:

Date:

Current user: Administrator
Pat ID: 21234

The appropriate laboratory test should be selected followed by the Select button.

If no lab results received click on no positive microbiology but remember to go back and change this once results are received as this will alter the case definition.

Figure 10: Laboratory findings criteria for pneumonia

Confirm Microbiological Findings:

Positive quantitative culture from minimally contaminated lower respiratory tract specimen (PN1)

- Broncho-alveolar lavage (BAL) with a threshold of $\geq 10^4$ CFU/ml or $\geq 5\%$ of BAL obtained cells contain intracellular bacteria on direct microscopic examination (classified on the diagnostic category BAL)
- Protected brush (PB Wimberley) with a threshold of $\geq 10^3$ CFU/ml
- Distal protected aspirate (DPA) with a threshold of $\geq 10^3$ CFU/ml

Positive quantitative culture from possibly contaminated lower respiratory tract specimen (PN2)

- Quantitative culture of lower respiratory tract specimen (eg endotracheal aspirate) with a threshold of 10^6 CFU/ml

Alternative microbiological method (PN3)

- Positive blood culture not related to another source of infection
- Positive growth in culture of pleural fluid
- Pleural or pulmonary abscess with positive needle aspiration
- Histologic pulmonary examination shows evidence of pneumonia
- Positive exams for pneumonia with virus or particular germs (Legionella, Aspergillus, mycobacteria, mycoplasma, Pneumocystis carinii)
- Distal protected aspirate (DPA) with a threshold of $\geq 10^3$ CFU/ml
 - Positive detection of viral antigen or antibody from respiratory secretions (eg EIA, FAMA, shell vial assay, PCR)
 - Positive direct examination or positive culture from bronchial secretions or tissue
 - Seroconversion (ex: influenza viruses, Legionella, Chlamydia)
 - Detection of antigens in urine (Legionella)

Positive sputum culture or non quantitative lower respiratory tract specimen culture (PN4)

No positive microbiology (PN5)

Cancel

Select

Previously, VAP that did not fit the ECDC criteria were not included or recorded in Ward Watcher. From 2018 each pneumonia has an option for PN number +X (e.g. PN1x, PN4x) which will state does not fit the ECDC criteria but clinically is treated as a VAP

Non-ECDC ventilator associated pneumonia requires:

1. Pyrexia OR abnormal WCC

AND

2. Two or more from:

- New onset of purulent sputum
- Cough, dyspnoea
- Suggestive auscultation
- Worsening gas exchange

AND

3. A respiratory device present

AND

4. 4. Positive microbiology

- PN1X if 1 to 3 above and positive culture from minimally contaminated LRT specimen

- PN2X if 1 to 3 above and positive culture from possible contaminated LRT specimen
- PN3X if 1 to 3 above and established by alternative microbiological criteria
- PN4X if 1 to 3 above and positive sputum culture/non-quantitative LRT specimen

3.4 Diagnosing a CVC Related Infection (Local and General)

When all signs and symptoms for the infection have been recorded the “Check” button shown in Figure 12 should be selected. On checking the infection criteria the “Confirmed Infection” is displayed. The lower part of the infection detail window shown in Figure 11 allows the organism and where appropriate antimicrobial resistance to be entered.

Figure 11 Infection Details Window- CVC related Infection

The screenshot displays the 'Infection Details Window' for a CVC related infection. At the top, it shows 'Healthcare Associated Infection' with patient ID '(0102640007)' and infection code 'ORANGE (H123456)'. The location is 'ICU' and the date is '03/09/2017'. The window is divided into three main sections:

- 1. Identify suspected infection:** This section has three radio buttons: 'Blood stream infection', 'CVC related infection (NOT blood stream)' (which is selected), and 'Pneumonia'. Below these are three checked checkboxes: 'Quantitative CVC culture >= 10³ CFU/ml OR semi-quantitative CVC culture > 15 CFU (Y/N)', 'Pus/inflammation at the insertion site or tunnel (Y/N)', and 'Clinical signs improve within 48 hours after catheter removal (Y/N)'. A callout box points to the 'CVC related infection' radio button, stating 'Type of infection is selected e.g.CVC'.
- 2. Check if an ECDC confirmed infection:** This section has a 'Confirmed infection:' dropdown menu with 'CRI2X' and 'General & Local CVC-related infection' options. A 'Check' button is located to the right. A callout box points to this button, stating 'Check button'.
- 3. Select the causative organism(s) (with resistance, if appropriate):** This section has four radio buttons: 'Identified below' (selected), 'Examination not done', 'Not found / not identified / cannot be classified', and 'Sterile examination (eg -ve culture)'. Below these are three rows for entering organism details, each with a 'Select' button, a text field for the organism name, and a 'Clear' button. A callout box points to the 'Identified below' radio button, stating 'Infection code and type displayed'.

At the bottom of the window, it shows 'Current user: Administrator' and 'Pat ID: 21234'. On the right side, there are three buttons: 'Delete...', 'Cancel', and 'Save'.

Figure 12: Infection Details Window – Local CVC Related Infection
Healthcare Associated Infection (0102640007) Olivia ORANGE (H123456)

ICU

1. Identify suspected infection

Blood stream infection
 CVC related infection (NOT blood stream)
 Pneumonia

Quantitative CVC culture >= 10⁴ CFU/ml OR semi-quantitative CVC culture > 15 CFU (Y/N)
 Pus/inflammation at the insertion site or tunnel (Y/N)
 Clinical signs improve within 48 hours after catheter removal (Y/N)

Date:

2. Check if an ECDC confirmed infection

Confirmed infection:

3. Select the causative organism(s) (with resistance, if appropriate)

Identified below
 Examination not done
 Not found / not identified / cannot be classified
 Sterile examination (eg -ve culture)

Organism	Group	Resistance
Achromobacter sp.	Gram negative bacilli	Cefotaxim/Ceftazidim sensitive
Acinetobacter baumannii	Gram negative bacilli	Cefotaxim/Ceftazidim resistant
Acinetobacter calcoaceticus	Gram negative bacilli	Unknown
Acinetobacter haemolyticus	Gram negative bacilli	
Acinetobacter lwoffii	Gram negative bacilli	
Acinetobacter sp. (Not specified)	Gram negative bacilli	
Acinetobacter sp. (Other)	Gram negative bacilli	
Actinomyces sp.	Other bacteria	

highlighted as causative organism 1:
 highlighted as causative organism 2:
 highlighted as causative organism 3:

Current user: Administrator Pat ID: 21234

4 REVIEWING HAI DATA

4.1 To view details of an infection already recorded in WardWatcher

Go to the HAI Surveillance screen and select the infection of interest on the date of interest and then select the "View Highlighted" button. This will open the HAI daily details page. Again click on infection of interest and view highlighted button (Figure 13). This will open the infection of interest details.

Figure 13: HAI Daily Details - List of infections by date

HAI

(0102640007) Olivia ORANGE (H123456)

IC


Suspected Unit Infections

Date	Day	Status
03/09/2017	3	Confirmed
04/09/2017	4	Unresolved
05/09/2017	5	No infection

Unit admission date: 01/09/2017
Unit discharge date: 07/09/2017

Confirmed Unit Infections

Date	Day	Infection	Organism	Antimicrobials
03/09/2017	3	BSI-A Blood stream infection (Type A)	Staphylococcus aureus	Y

 Highlight the infection you want to view and then click view infection to view previously recorded infections.

4.2 To delete an infection already recorded in WardWatcher

To delete a record in WardWatcher, highlight the record to be deleted and click delete. A message confirming the action will appear. The action can be confirmed or cancelled.

Figure 14: Deleting a record.

Healthcare Associated Infection (0102640007) Olivia ORANGE (H123456) ICU

1. Identify suspected infection Blood stream infection CVC related infection (NOT blood stream) Pneumonia

Date: 03/09/2017

Quantitative CVC culture >= 10³ CFU/ml OR semi-quantitative CVC culture > 15 CFU (Y/N)

Pus/inflammation at the insertion site or tunnel (Y/N)

Clinical signs improve within 48 hours after catheter removal (Y/N)

2. Check if an ECDC confirmed infection

Confirmed infection:

3. Select the causative organism(s) (with resistance, if appropriate)

Identified below Examination not done Not found / not identified / cannot be classified Sterile examination (eg -ve culture)

Organism	Group	Resistance
Achromobacter sp.	Gram negative bacilli	Ceftazidime/Ceftriaxone sensitive
Acinetobacter baumannii	Gram negative bacilli	Cefotaxim/Ceftazidim resistant
Acinetobacter calcoaceticus	Gram negative bacilli	Unknown
Acinetobacter haemolyticus	Gram negative bacilli	
Acinetobacter lwoffii	Gram negative bacilli	
Acinetobacter sp. (Not specified)	Gram negative bacilli	
Acinetobacter sp. (Other)	Gram negative bacilli	
Actinomyces sp.	Other bacteria	

highlighted as causative organism 1:

highlighted as causative organism 2:

highlighted as causative organism 3:

Current user: Administrator Pat ID: 21234

4.3 Entering an infection retrospectively (once microbiology has been received)

Go to HAI Surveillance page suspected unit infections and click on the date new infection was diagnosed clinically and select infection confirmed.

Then select new infection to enter details.

See page 7 for details on entering infection data.

Appendix 1

HAI	Healthcare acquired infection.
ECDC	European Centre for Disease Prevention and Control.
VAP	Ventilator acquired pneumonia.
BSI	Blood stream infection.
CVC	Central venous catheter
CFU	Colony forming units.