Strengthening IPC for Effective Epidemic Preparedness

IPC FOCAL PERSONS TRAINING

Topic: Implementation of HAIs in the hospital

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Outline

- Writing a surveillance
- Establishing HAI case definition
- Application of case definitions in HAI surveillance

Writing a surveillance plan

- Rationale for surveillance population and targets
- Purpose, objectives, use of data
- Responsible surveillance team
- Methodology: case definitions, numerator and denominator data sources, type of data collection
- Evaluation of data quality
- Reporting and feedback post implementation evaluation

Establish case definition

- A surveillance case definition is a set of uniform criteria used to define a disease that enables HCWs to classify and count cases consistently for surveillance purposes.
- Always use standardized case definitions so that the data you collect can be compared to data collected in future surveillance activities or compared to other facilities.
- It is critical to ensure:
  - ✓that established experts in surveillance or IPC/HAI can help guide adaptation (e.g., could consult regional surveillance expertise);
  - ✓that adapted case definitions are validated; and
  - ✓understanding that benchmarking or comparison with other countries will be challenging.

Cont.

- Two important definitions to make clear are:
- **Hospital-acquired infection (HAI):** According to CDC, the case definition of HAI is that the date of infection (event) occurs on or after the third calendar day of admission to an inpatient location where day of admission is calendar day 1.
- **Present on admission:** Date of event of site-specific infection criterion occurs on day of admission to an inpatient location (calendar day 1), the 2 days before admission, and the calendar day after admission (present on admission time period).

CDC Case definition for HAI

- CDC case definitions are commonly used as international case definitions.

The case definitions are based on:

- Clinical signs/symptoms
- Laboratory investigations
- Radiological investigations.

These case definitions might be difficult to implement in LMICs because of the need for technical expertise, laboratories and other diagnostic enablers.

- CDC defines HAI as infections occurring on or after the third calendar day of admission where day of admission is calendar day 1 (in the infection window period).

ECDC Case definition

Onset of HAI

- Day 3 onwards
- Day 1 (day of admission) or day 2: **SSI criteria** met at any time after admission (including previous surgery 30 days / 90 days
- Day 1 or day 2 **and patient discharged** from acute care hospital in preceding 48 hours
- Day 1 or day 2 and patient discharged from acute care hospital in preceding 28 days if **Clostridium difficile infection present**
- Day 1 or day 2 and patient has relevant **device inserted** on this admission prior to onset
- Day 1 or day 2 after birth for **neonates**

OR

- Meets the case definition on the day of survey
- Patient is receiving treatment and HAI has previously met the case definition between day 1 of treatment and survey day

Application of case definition in HAI survey

HA Pneumonia

Consider the following criteria when defining a case of hospital-acquired pneumonia:2

- a physician's diagnosis of pneumonia alone is not an acceptable criterion for health care-associated pneumonia;
- it is important to distinguish between changes in clinical status due to other conditions, such as myocardial infarction, pulmonary embolism, respiratory distress syndrome;
- early onset pneumonia occurs during the first four days of hospitalization and is often caused by strains of of certain bacteria such as Haemophilus influenzae, and Streptococcus pneumoniae; and
- late onset pneumonia emerges after four days of hospitalization and is more likely caused by Gram-negative bacilli or S. aureus.

HA UTI

When planning your surveillance efforts, take the following factors into consideration:

- UTI are a very common type of HAI.
- They cause less morbidity than other HAI but can occasionally lead to bacteraemia and death.
- The diagnosis is based on clinical and laboratory criteria.
- Bacteria arise from the gut flora, either normal (Escherichia coli) or hospital acquired.
- It is important to distinguish between asymptomatic and symptomatic UTI. Asymptomatic UTI do not require antibiotic treatment and are currently excluded from the surveillance of HAI.

HA BSI

Here are two types of BSI. **Primary BSI** is not related to an infection at another body site. **Secondary BSI** is related to an infection at another body site (e.g., pneumonia, UTI or SSI).

When planning your surveillance efforts, take the following factors into consideration:

BSI are a major cause of morbidity and mortality.

- They occur at the entry site of an IV device or in the subcutaneous path of the catheter (tunnel infection).
- Resident or transient cutaneous flora is the source of infection.
- Organisms colonizing the IV catheter may produce bacteraemia without visible external infections.
- Insertion of central lines can cause CLABSI.
- The main risk factors are length of catheterization, level of asepsis at insertion and catheter care.

HA SSI

- The case definitions vary according to the level of incision/infection.
- Unlike other HAI, the date of the event is not the date of admission to hospital, but the date of the surgical procedure.
- Date of event for infection occurs within 30 days after the surgical procedure (where day 1 = the procedure date)
- involves only the skin and subcutaneous tissue of the incision

Patient has at least one of the following:

- Purulent drainage from the superficial incision.
- Organisms identified
- Diagnosis of SSI by the surgeon

Types of HA SSI

- Superficial SSI
- Deep SSI
- Organ Space SSI

There are case definitions for other HAI that occur less frequently.

- bone and joint infection
- central nervous system infection
- cardiovascular system infection
- eye, ear, nose, throat or mouth infection
- LRTI other than pneumonia
- gastrointestinal system infection
- reproductive tract infection
- skin and soft tissue infection
- systemic infection
- urinary system infection.

Applying Case Definition to HAI

HAI vs Non-HAI

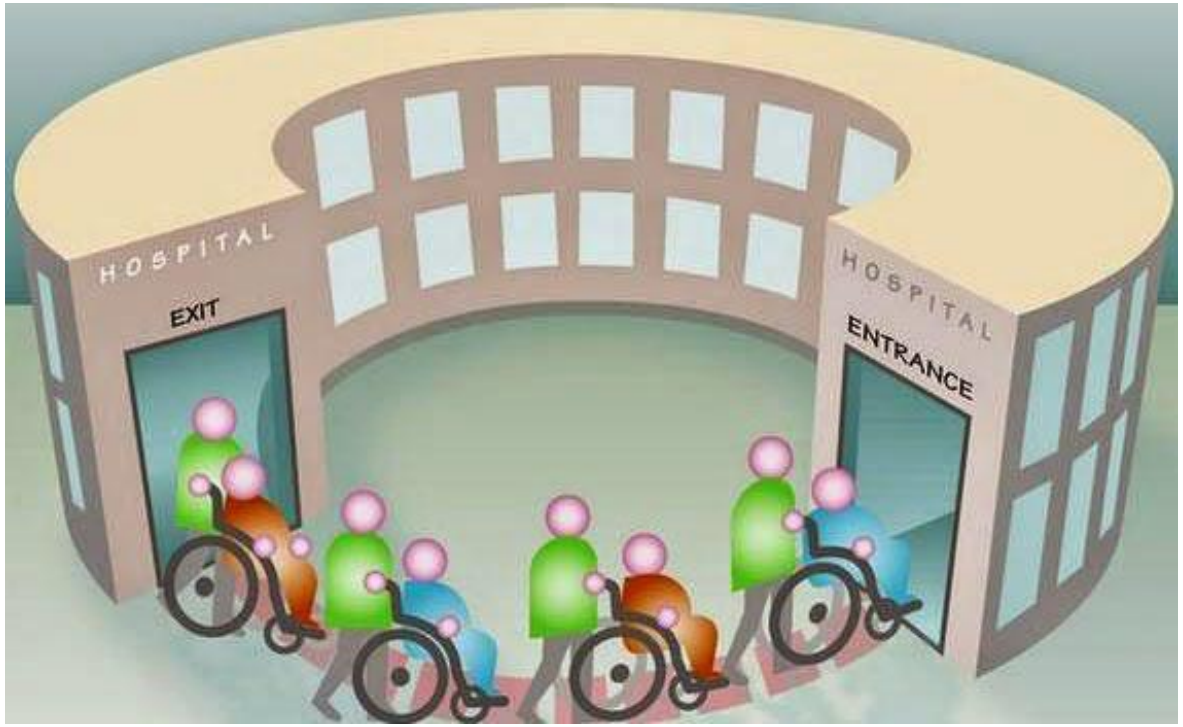
- The classification of an infection as HAI is made by means of the length of time from the admission of a patient to the ward until the first symptoms appear.

An infection is considered as HAI if the onset of infection (= day with first symptom or sign) occurs on day 3 or later, post admission to the ward

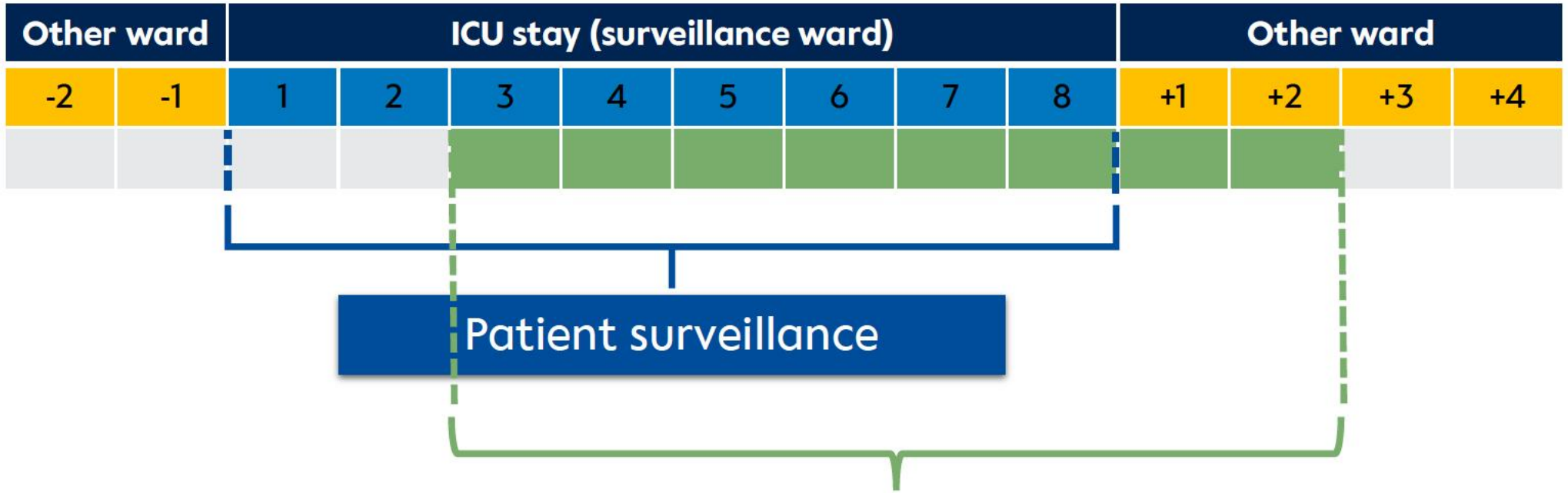
Admission to the ward = Day 1	Non-HAI
Day 2	Non-HAI
Day 3	HAI
Day 4	HAI
Day 5	HAI
…	…

Unit of surveillance

- Surveillance for all patients present on the ward and admitted to the ward during surveillance period
- From admission to discharge/transfer from the ward
- Re-Admission to the surveillance ward = newcase



What is considered an HAI for a survey ward?



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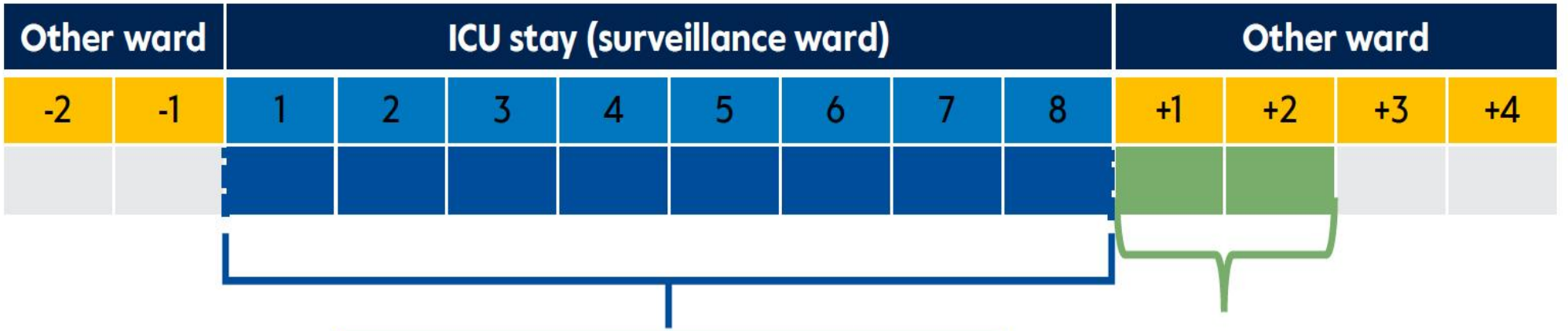

Onset of symptoms = Hospital associated for surveillance ward

No tracking of patients for an HAI after discharge/transfer to another ward → only to be considered in case of readmission

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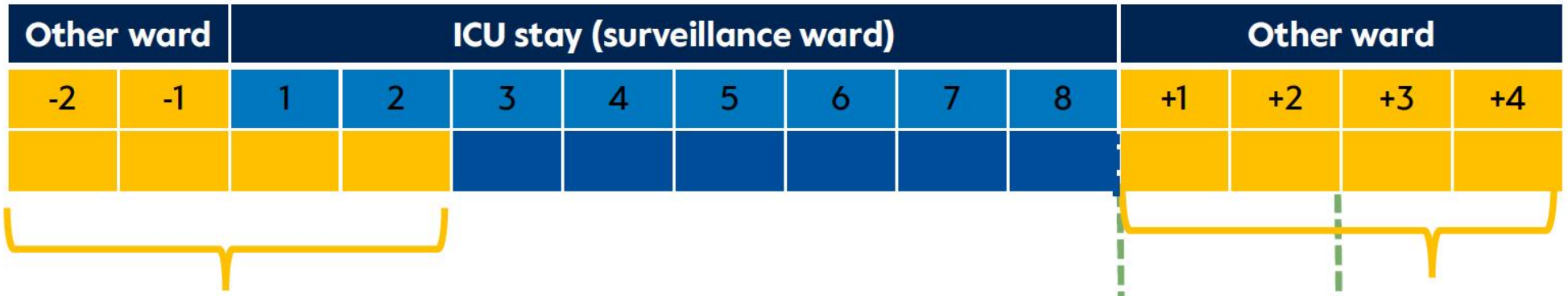

Onset of symptoms before/shortly after admission →
Ø NO documentation of infection

Onset of symptoms after transfer/discharge →
Ø NO documentation of infection

Except in case of readmission:

Onset of symptoms = Hospital associated for surveillance ward

Cont.

Other ward		ICU stay (surveillance ward)								Other ward			
-2	-1	1	2	3	4	5	6	7	8	+1	+2	+3	+4
	X												

First signs before admission: No HAI

Other ward		ICU stay (surveillance ward)								Other ward			
-2	-1	1	2	3	4	5	6	7	8	+1	+2	+3	+4
			X										

First signs on day of or 1 day after admission: No HAI

Other ward		ICU stay (surveillance ward)								Other ward			
-2	-1	1	2	3	4	5	6	7	8	+1	+2	+3	+4
										X			

First signs after transfer: No HAI

Cont.

Other ward		ICU stay (surveillance ward)								Other ward			
-2	-1	1	2	3	4	5	6	7	8	+1	+2	+3	+4
				X									

First signs ≥ 3 days after admission: **hospital-associated for surveillance ward**

Trans-fer **Read-mission**

Other ward		ICU stay (surveillance ward)								Other ward	ICU stay (surveillance ward)		
-2	-1	1	2	3	4	5	6	7	8	+1	9	10	11
											X		

First signs < 3 days after admission: **hospital-associated for surveillance ward**

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Thank You!

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