Timeliness can be defined in various ways:

- Usually defined as the time between any two defined steps in a surveillance system. The time points chosen are likely to vary depending on the purpose of the surveillance activity. For outbreak detection this can be defined using various time points (e.g. the time between exposure to the infectious agent and the initiation of risk-mitigation measures or the time between when disease could have been detected and reported and the time when it actually was reported).
- For planning purposes, timeliness can also be defined as whether surveillance detects changes in time for risk-mitigation actions to reduce the likelihood of further spread. One way of measuring this would be to assess the number of cases present in the population when disease was detected.

The precise definition of timeliness chosen should be stated as part of the evaluation process.

To evaluate the timeliness of the system, consult the EVA tool, to re-design the system with the goal of optimizing timeliness, read through the advice below.

	Surveillance design step	**Advice for improvement of TIMELINESS**
1	**Surveillance system**	
1.1	**Hazard**	
1.2	**Surv. Objective**	
1.3	**Geographical area covered**	
1.4	**Susceptible species**	
1.5	**Risk characteristics**	If hazard displays a strong seasonal pattern, accounting for this high-risk period may increase timeliness. Timeliness 2: Targeting high risk strata where introduction of disease is more likely can increase timeliness and reduce the potential for further spread.
2	**Components overview**	If timeliness is important, ensure that at least one component is based on continuous data collection or frequently repeated surveys.
3	**Target population**	
3.1	**Target species**	
3.2	**Target sector**	
3.3	**Sectors missed**	
3.4	**Geographical area covered**	
3.5	**Target criteria**	
3.6	**Percentage covered**	
4	**Disease suspicion**	
4.1	**Definition**	Definitions that identify disease in the early stages will increase timeliness. However also consider the implications for false alarm rate.
4.2	**Obligations**	

4.3	**Notification procedures**	Consider simple, rapid methods of reporting to ensure notifications are received quickly eg phone, email vs postal methods of reporting will speed up the process and minimize the potential for further spread of disease before risk mitigation procedures are put in place.
4.4	**Actions upon suspicions**	
4.5	**Actions upon confirmation**	
5	**Enhancements**	Timeliness 2: For early detection, raising awareness of the hazard, reporting and requirements can reduce the time from incursion to reporting/detection.
6	**Testing protocol**	Timeliness 1: To improve timeliness between different steps of the surveillance system, aim to reduce the time getting samples from the field to the laboratory, diagnostic testing, data management, report generation and dissemination of findings. Tineliness 2: Choose (in conjunction with those responsible for laboratory analysis) a suitable testing option to improve timeliness. For instance, pathogen detection may allow detecting acute infections as opposed to serological testing
6.1	**Type of test to be carried out**	
6.2	**Type of sample to be collected**	
6.3	**Pooling**	
6.4	**Screening/first test**	To improve timeliness between different steps of the surveillance system, you can aim to reduce the time of getting the samples from the field to the laboratory, time needed to start and carry out diagnostic testing, data management, report generation and dissemination of findings.
6.5	**Confirmatory/ second test**	To improve timeliness between different steps of the surveillance system, you can aim to reduce the time of getting the samples from the field to the laboratory, time needed to start and carry out diagnostic testing, data management, report generation and dissemination of findings.
6.6	**Further details**	
7	**Study design**	Study design affects timeliness as the availability of a sampling frame, time of selecting the units (e.g. census versus sample), efforts to collect samples (e.g. bulk milk versus individual samples) and sample size (time for collection and testing) impact the time required until results are available.
7.1	**Point of sample collection**	Timeliness 1:Surveillance at easily accessable sampling points (e.g. slaughter house, milk collection centres, sentinel sites) will be less time consuming and is quicker to return results than targeting individuals at the source (farm, natural habitat). Timeliness 2: The sampling point determines whether the target population can be accessed continuously (e.g. slaughter house, sentinels), only during parts of the year (e.g. hunting bag) or only through surveys (farm). Therefore, choosing a sampling point that allows frequent and easy access of the target population may improve timeliness.

7.2	**Selection of units**	In many situations a census is impossible or excessively expensive. If undertaken properly, sample surveys can generate reliable information in a much shorter time than with a census
7.3	**Target unit**	
7.4	**Sampling unit**	
7.5	**Sampling design**	
7.6	**Number of units in the target population**	
7.7	**Sensitivity of the testing protocol**	
7.8	**Specificity of the testing protocol**	
8	**Sampling strategy**	
8.1	**Sampling at the primary sampling unit (PSU) level:**	
8.2	**Sampling at the secondary sampling unit (SSU) level:**	
8.3	**Selection criteria WITHIN the population**	
8.4	**Risk-based allocation**	
8.5	**Sample size calculation**	
8.6	**Sample allocation at the primary level**	
8.7	**Sample allocation at the Secondary level**	
8.8	**Sample collection timeline**	
9	**Data Generation/ Sampling collection process**	
9.1	**WHO will collect the samples?**	
9.2	**HOW will samples be collected?**	Timeliness 1: Where 'sample' is data, consider the use of new technology such as mobile phones, internet etc as this will facilitate faster collection.
9.3	**WHEN/HOW OFTEN will samples be collected?**	Timeliness 1: Increased sampling frequency will reduce the time to detection. Timeliness 2: Increased sampling frequency will result in a lower number of infected farms at the time when disease is detected (ie less spread).
9.4	**Training**	
9.5	**Follow-up**	
10	**Transfer means**	
10.1	**HOW will samples be transferred?**	Consider using faster tranfer methods to improve timeliness.
10.2	**WHEN/HOW OFTEN will samples be collected?**	More frequent sample collection will improve timeliness of detection.
10.3	**Training**	
11	**Data Translation/ sample analyses process**	

11.1	**WHO will perform the analyses?**	Using more skilled staff may lead to more timely results Also consider the capability and capacity of the organistions involved to ensure tests are carried out promptly. Location may also be important as if samples need to travel long distances this can negatively impact on timeliness. The method of reporting results e.g. use of email/internet/phone can help in the speedy tranfer of results and other data.
11.2	**HOW will samples be analysed**	
11.3	**WHEN/HOW OFTEN will samples be collected?**	Where timeliness is of importance consider immediate or real-time testing to make results available to decision makers and enable prompt action where required.
11.4	**Expected LOAD**	Timeliness 1: Where a heavy workload is expected this may impact on timeliness if resources are limited and sample/data analysis is delayed. Ensure the laboratories or organisations carrying out the analysis have the capactiy to deal with the expected load and sufficient staff resource is available at key times. Timeliness 2: As above, delays in the availability of results may prevent action being taken promptly enough to prevent disease spread.
11.5	**Training**	Appropriate training can improve timeliness.
11.6	**Follow-up**	
12	**Epidemiological analyses**	
12.1	**Are there any epidemiological DATA that need to be collected?**	The collection of information on clinical signs that may have prompted the sample to be collectd could enable restrictions to be placed or action taken prior to confirmatiory test results being available. This is worth considering particularly where the goal is early detection.
12.2	**WHO will perform the analyses?**	Timeliness 1: Staff trained and experienced in the methods required will be able to perform them faster, thereby reducing the time for this step. Timeliness 2: Trained, experienced staff can that can interpret the results quickly will enable faster action to be taken to mitigate consequences.
12.3	**HOW will epidemiological analyses be performed?**	
12.4	**WHEN/HOW OFTEN?**	Timeliness 2: Using immeidate or real-time analysis will allow prompt action to be taken to ensure risk mitigation measures can be put in place to reduce the likelihood of further spread.
12.5	**Training**	
12.6	**Data management needs**	
12.7	**Software needs**	The use of appropriate software can greatly help with and speed up the process of reporting and analysis, for example where regular reporting is required the use of standard queries or scripts can greatly reduce the time taken.
13	**Dissemination of results**	
13.1	**WHO will disseminate the results?**	
13.2	**WHO is the TARGET of dissemination?**	

13.3	**HOW will results be disseminated?**	
13.4	**WHEN/HOW OFTEN?**	
14	**Surveillance review**	
14.1	**Who**	
14.2	**When**	
14.3	**How often**	

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