One Health Event Based Surveillance (EBS) Enhancement and Data Visualization Dashboard, Bangladesh

Operational Guidelines

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Glossary

Central Admin   First-order administrative panel; an abbreviation that refers to first level administrative units e.g. Director of IEDCR

Super Admin   Second-order administrative panel; an abbreviation that refers to second level administrative units e.g. Director of DLS, Director of FD, Director of BLRI, Director of OHS

OH   One Health

OHEBSDD   One Health Event Based Surveillance Enhancement & Data (Management) Visualization Dashboard

OHS   One Health Secretariat

IEDCR   Institute of Epidemiology Disease Control and Research

BFD   Bangladesh Forest Department

BLRI   Bangladesh Livestock Research Institute

DLS   Department of Livestock Services

CDC, DGHS   Communicable Disease Control, Directorate General of Health Services

US CDC   U.S. Centers for Disease Control and Prevention

EBS   Event Based Surveillance

Dashboard   A graphical summary of various pieces of important information

Event   Any outbreak of disease, or any uncommon illness of potential public health concern

Surveillance   Ongoing systematic collection and analysis of Data about an event that can lead to action being taken to control event.

Outbreak   Event occurrence confirmed or suspected.

WHO   World Health Organization.

ILI   Influenza like Illness

SARI   Severe acute respiratory infections

Introduction:

OHEBS Data Dashboard is an information system designed to facilitate sharing and analysis of country (Bangladesh) disease information. It also helps to finding outbreaks faster and managing them empirically can contribute to reduce illness, death and economic loss from endemic or pandemic.

OHEBS Data Dashboard aims to consolidate disease events countrywide using information that OHEBSDD receives from different official and unofficial sources: District, Division, country, partner Non-Governmental Organizations (NGOs), cooperating institutions, Government Organizations (DLS, BFD, BLRI, and DGHS), public domains, the media and web-based health surveillance systems. For verification purposes, OHEBSDD uses not just official, but also unofficial sources of information (such as in-country assistance projects and personal contacts with NGOs and other institutions). This allows maintaining a good level of awareness.

OHEBSDD provides updated information on countrywide disease (Human, Animal, and Environment) distribution and current threats at national level. Users can access various functions including mapping and graphing tools and search and analysis tools for new or historic outbreaks.

OHEBSDD is open to the public. This platform is designed to who is interested in timely national disease information and analysis.

The purpose of this document is to help users to enter and use the OHEBSDD application. For necessary preparedness and response, it will also provide information on the trends of endemic public health/ animal health/ one health diseases or events of concern or threat.

General Objective

The website shall provide the necessary features. Which allows a user to see data trend through graphical visualization in Dashboard. This queries may have been created by the situation.

Data Visualization:

Data visualization involves operating and converting important data and information into meaningful and knowledgeable visuals using various tools. For visualizing data we need the useful and correct software tools to handle various types of data in structured or unstructured format from different sources such as files, web API, databases, and many more. We must choose the appropriate visualization tool that fulfils all the purpose. The tool should support interactive plots generation, connectivity to data sources, combining data sources and secured access to data sources. All these features allow us to make the opposite visuals of our data and also save time.

Advantages of Data Visualization

- **Easy to understand**: Decision-makers use data visualization tool in a graph or chart, to create plots easily and rapidly consume important information. The data shows the clear visualization of the public health or animal health events of concern (trends and emergency response). For example, if there is any disease event of concern in respective Public health or Animal Health sector (Livestock's or wildlife) that are significantly spreading, decision-makers will easily find out from the data/information what circumstances are at present and how to respond to the event of concern encountered. Through graphical locations, we can interpret the vast features of data very clearly and cohesively, which allows us to understand the data and to draw conclusions.

- **Quick Decision Making:** It is the good human competence that easily interprets visual data; data visualization contributes to improve the speed of decision-making processes. The Human mind can process visual images faster than texts and numerical values. Hence, seeing a graph, chart, or other visual and graphical representations of data is more pleasant and easy for our brain to process. To read and grasp text, and then convert this into a visualization of the data that might not be entirely accurate but difficult and time consuming to understand for the team of decision-makers and planners. Data visualization always helps to shorten meetings and efficient decision making.

- **Better Analysis:** Data visualization plays an important role for the stakeholders to analyze reports regarding event based disease surveillance, Community status of diseases of concern and research. Better analysis can put our focus on the areas that require more attention to improve the strategies for prevention, control and community awareness.

- **Identifying patterns:** The enormous amount of important data will give several opportunities for insights after visualized. The useful data and information gives better visualization and also provide better understanding of inter-sectoral collaboration and coordination. Exploring these patterns helps users concentrate on specific areas that need attention and multi-sectoral support, to establish the functional One-Health approach.
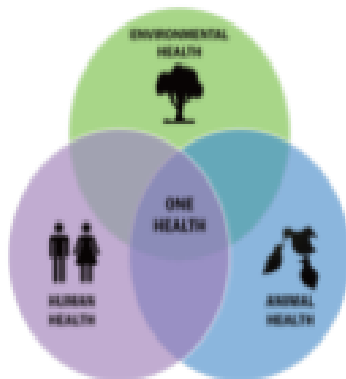
- **Detecting information Errors:** Data visualizing can also help quickly determine any errors within the data or information. Sooner the visualization facilitates detection of inaccurate data so it will be off from the analysis and the dashboard.
- **Exploring Global Emerging Diseases threats:** Global emerging infectious disease prevalence and incidence, finding through data and information correlations using visual representations is essential and helps to be prepared against emerging public health threats of concern.
- **Success stories:** Data visualizations are acknowledgement of successful prevention and control measures and One-Health partnership against emerging infectious diseases because of the method of displaying data to produce essential insights that will support better decisions.

This document (Dashboard User Manual) main aim is to provide more in-depth information and instructions to the features of the Dashboard and pattern for processes and application, and helps the user (for the overall information that the user may require) to follow to use the application, connecting and configuring a Data Source, creating a Dashboard and its objects, and generate reports for that Dashboard.

Phase I: Public View

Dashboard

After Registration and login to the data dashboard, you can see this screen

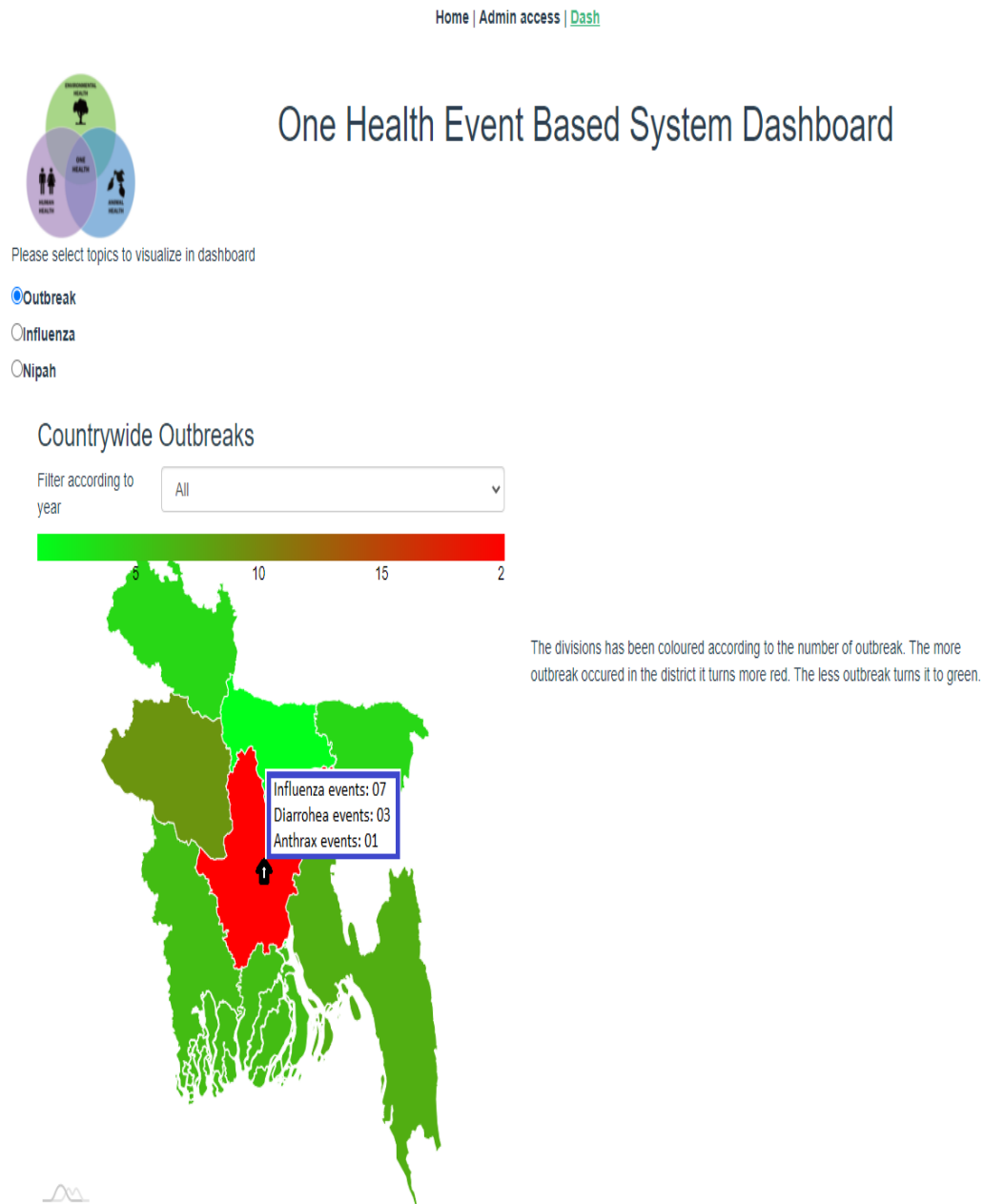Please select topics to visualize in dashboard

○ **Outbreak**

○ **Influenza**

◉ **Nipah**

On this screen, you can select the Event Name (e.g: Outbreak, Influenza, Nipah) and the access level for it (if all users can see this dashboard) and the number of events and the way they're distributed on the screen.

Outbreak

Click on the Outbreak Event and the following panel will appear:

This section provides countrywide Outbreak information. The map will update automatically if any new event is published.

This map is interactive so any interaction on the map will describe the events accordingly.

Users can point on any section of this map. After choosing any particle it provides the background data.
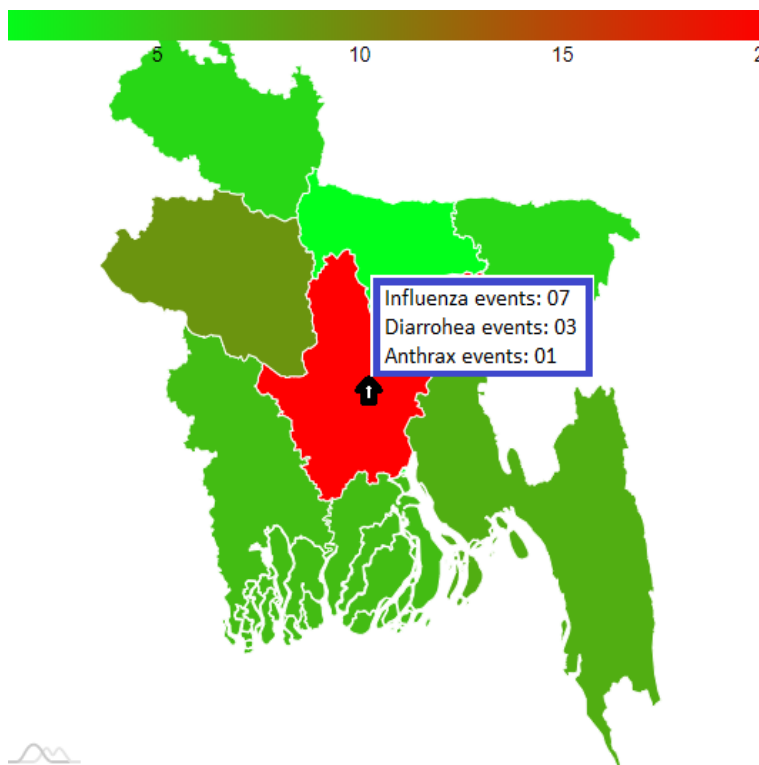
Countrywide Outbreaks

Filter according to year	All	⌄

- Here you can filter the data according to **year** or **all** the years.
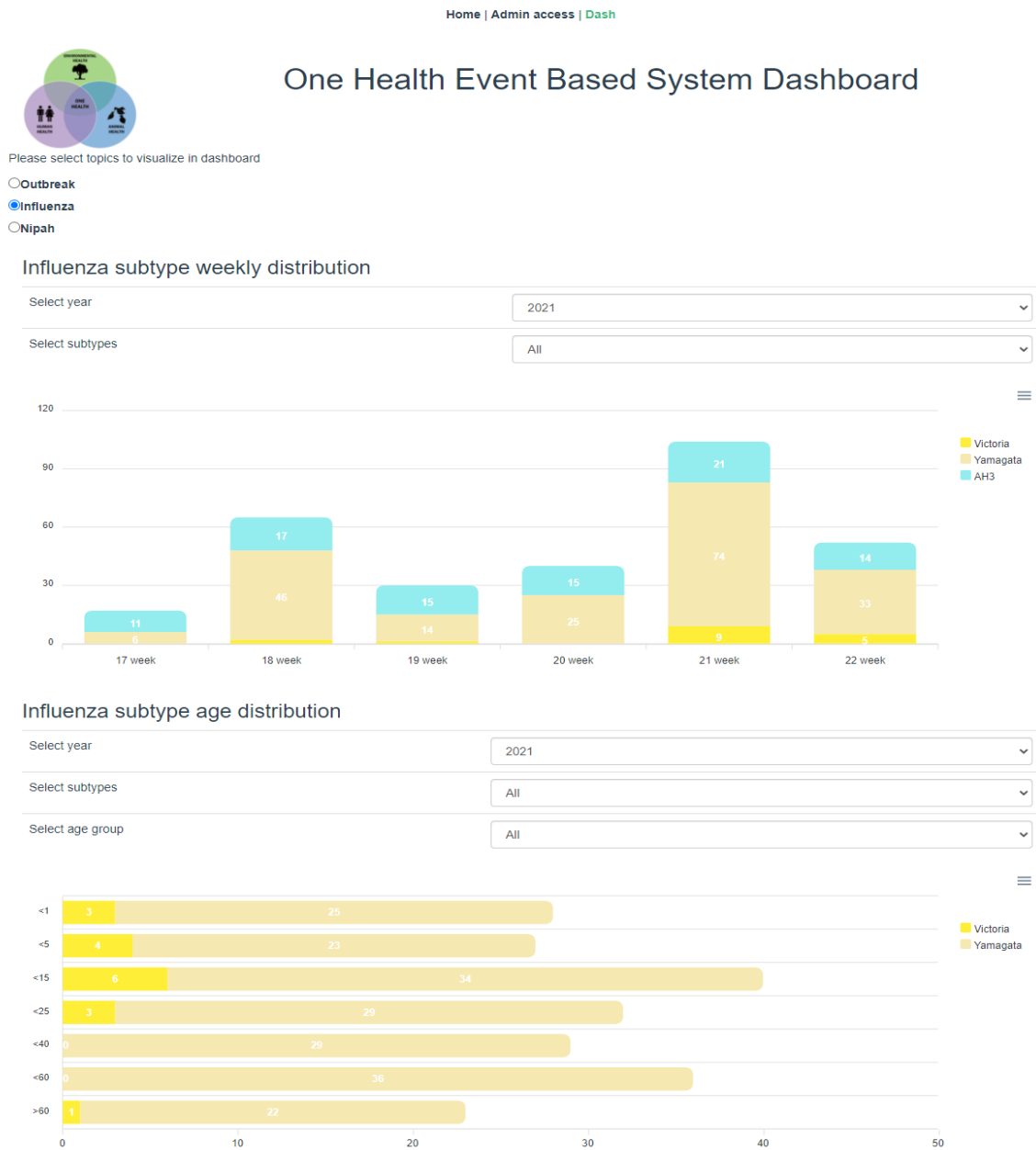
Division wise outbreaks

- The divisions has been colored according to the number of outbreak. The more outbreak occurred in a division it turns redder. The less outbreak turns into green.

Influenza

Click on the Influenza Event and the following panel will appear:

This section of dashboard provides Influenza information in graphical form. Any modifications on the data will update the charts accordingly.

Influenza subtype weekly distribution
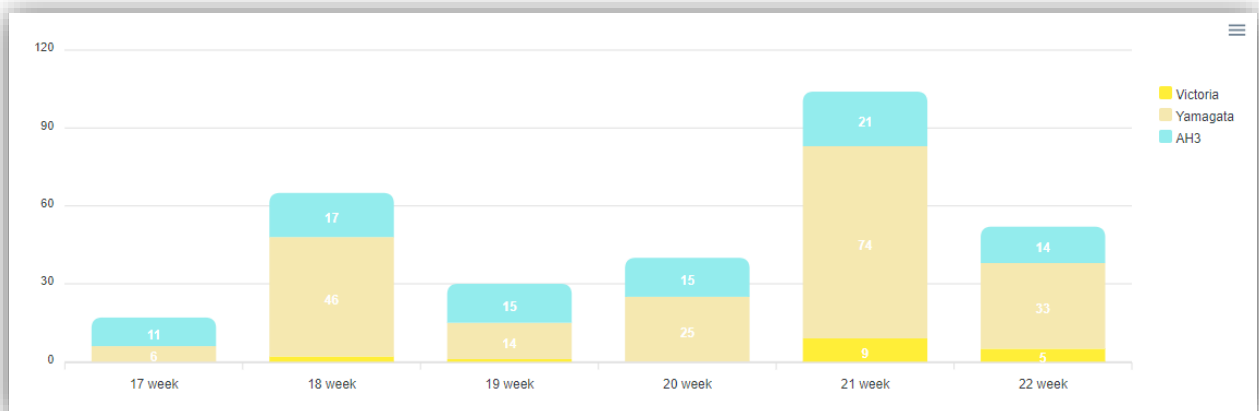
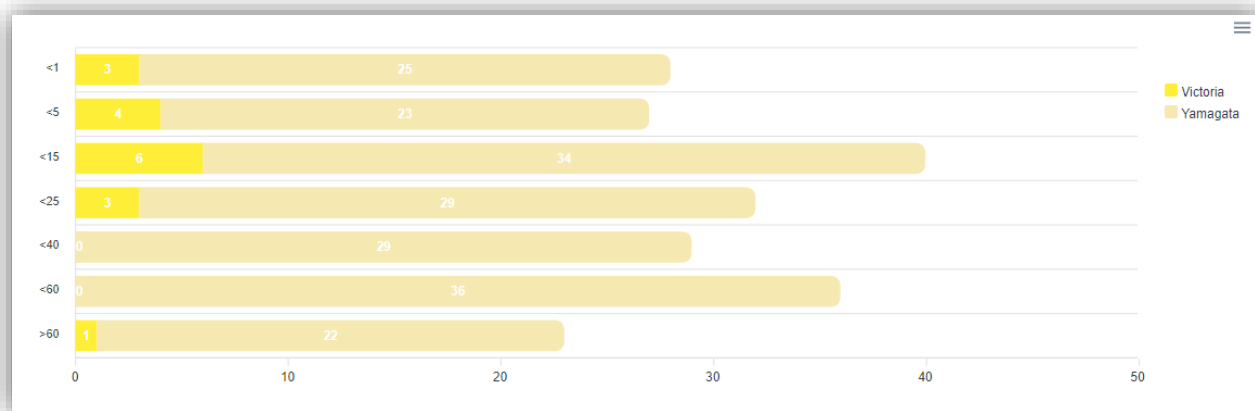| Select year	2021	⌄
Select subtypes	All	⌄

- Choose the **Year** and **Subtypes** from the dropdown box to view the related data.

Influenza subtype weekly distribution data view in vertical bar chart

- In this vertical bar chart you can view Influenza subtype distribution in weekly basis.

Influenza subtype age distribution in horizontal bar chart

 - In this horizontal bar chart you can view Influenza subtype age distribution.
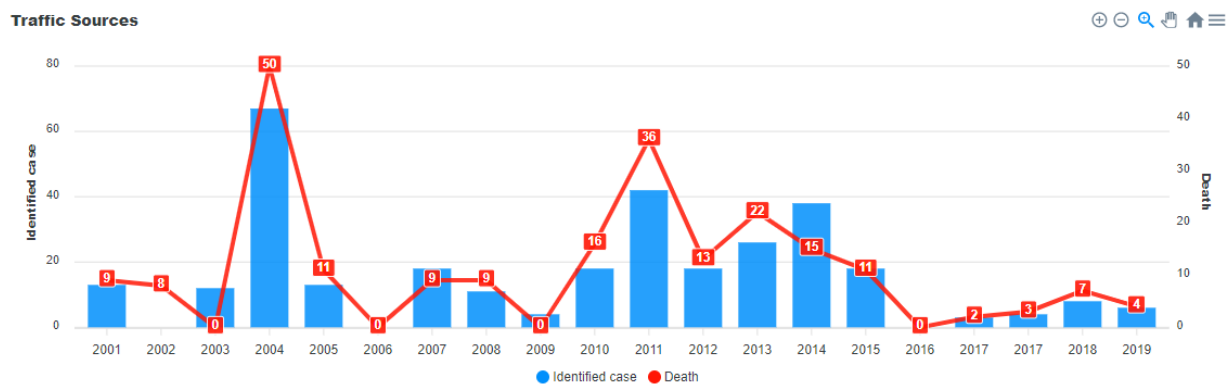
Influenza subtype age distribution

- Select **Year**, **Subtype**, **and Age** group, from the dropdown boxes to see the Influenza subtype age distribution.

Nipah Virus

Click on the Nipah Event and the following panel will appear:

Identified infected cases and deaths from Nipah virus

Traffic Sources

This section provides Nipah Virus information in graphical form. Any modifications on the data will update the charts accordingly.

Identified case: Identified cases chart is displayed as a bar graph (as above). The x-axis of the graph expresses the time scale and the y-axis represents the number of identified cases. Scrolling over the bars in the graph will provide a small summary box with identifies specific case details.

Deaths: Deaths chart is displayed as a line chart. The chart is labelled with the number of deaths in each year. Scrolling over the chart will provide a small summary box which identifies death details.

The legend to the below of the chart defines the color coding.

The "zoom/selection" panel on the left of the screen allows you to Zoom in/out, and to select your area of interest.

The "layers" panel on the right hand side of the map gives a range of aspects that can be visualized even simultaneously.

From the top right hand corner, you can choose whether or not the "Zoom/selection" and "layers" panels are displayed using the ⊕ ⊖ and ≡ buttons respectively.

Login to Dashboard:

To access the application, open up your web browser (an up-to-date version of Chrome, Edge, Firefox, Internet Explorer etc.)

Registration Page:

To create account fill up all the field provided in the Registration page.

Registration page

Already have an account please sign in

Name *

Email *

Mobile Number * (Only Numeric 11 char)

01.......

Designation *

Select Institution *

Password * (atleast 6 char)

Re-type Password *

Working sectors (Press space to add multiple skills)

Create Account

i. Name:

Name *

[   ]

Fill out your full name here. e.g: John Mathew

ii. Email:

Email *

[   ]

Insert your valid **email address** here (e.g: john@gmail.com). This email use in future for **Login** after approving your account by super admin

iii. Mobile Number:

Mobile Number * (Only Numeric 11 char)

[01.......   ]

Enter your valid **mobile number** here adding with your respective country code. e.g: +88017XXXXXXXXX

iv. Designation:

Designation *

[   ]

Insert your **designation** here. e.g: Scientist/Research Officer/IT Specialist etc.

v. Select Institution :

Select Institution *

[⌄]

Select your **institution**; e.g: DLS/IEDCR/FD/BLRI/OHS

vi. Password :

Password * (atleast 6 char)

[   ]

Create a **password** which will have any six characters. e.g: R9CXX>

vii. Re-type Password :

Re-type Password *

[   ]

Re-type the password in the box above; e.g: R9CXXX

viii. Working sectors:

Working sectors (Press space to add multiple skills)

[   ]

Insert your respective **working sector** here. For inserting multiple respective sectors separate then using space. e.g:

Entomology<space>Epidemiology<Space>Zoonosis<Space>Parasitology

ix. Create Account:

Create Account

Please click on the "**Create Account**" button

x.

Already have an account please sign in

If you already have an account please click on the **sign in**. If you do not have an account, Please fill out the **registration form** first.

Fill up all the field provided in the Login Page and then starting your experience on the OHEBSD Dashboard.

Email: Provide email address here, according to your registration. e.g: john@gmail.com

Password: Insert your password according to your registration; e.g: R9CXXX

Captcha: Press this button to refresh the **Captcha.** Write the calculated result of above mentioned **captcha.**
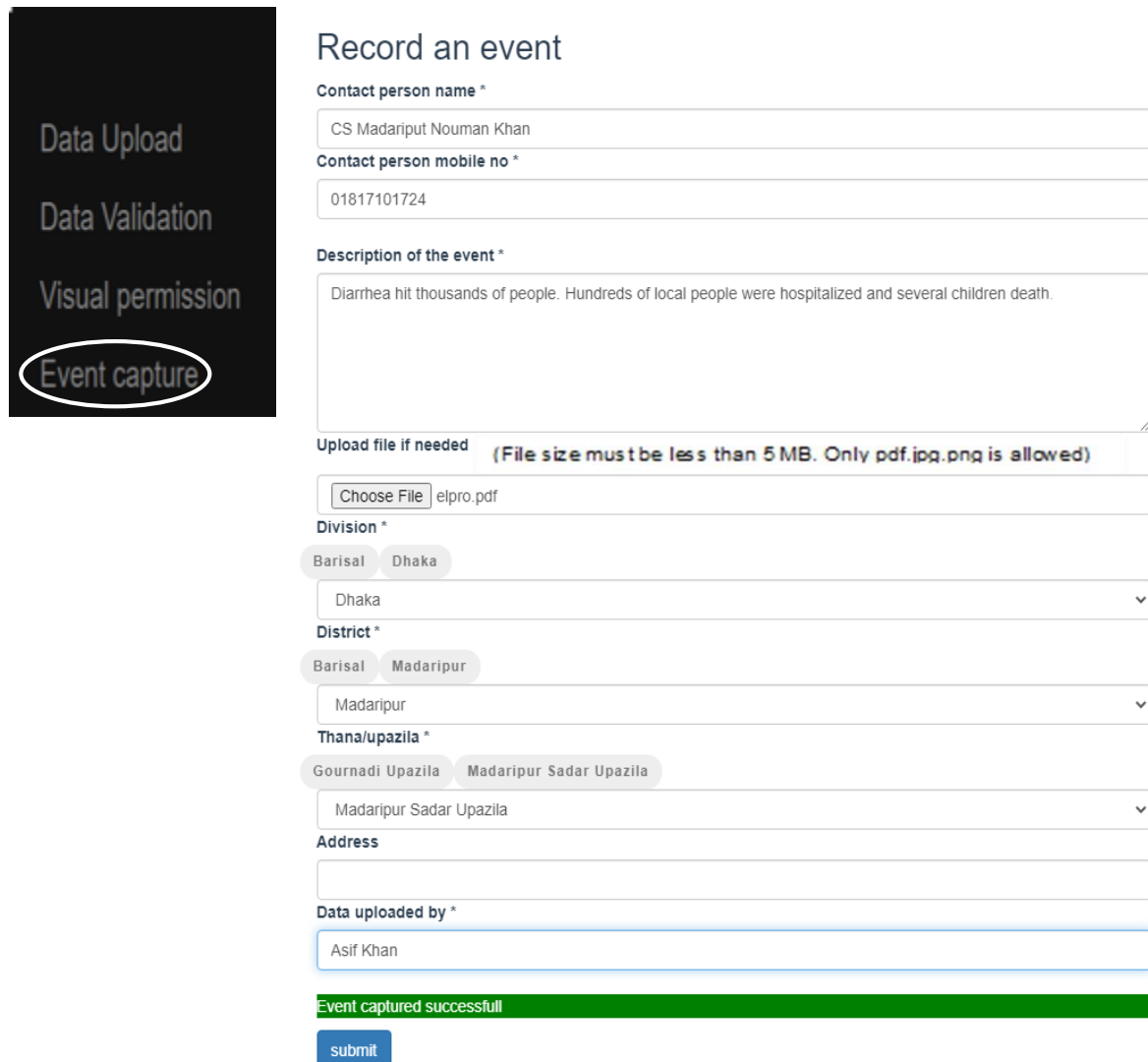
Login: Click on the "**Login**" button

Register: If you don't have any account click on the "register" option.

Click here: If you forgotten your password then press "Click here".

Event Capture:

Click on the Event capture menu bar and the following panel will appear:

Contact person name:

Insert contact person name here.

Contact person mobile no:

Contact person mobile no *

01817101724

Insert a valid mobile number of contact person.

Description box:

Description of the event *

Diarrhea hit thousands of people. Hundreds of local people were hospitalized and several children death.

Give a description of the event here.

Upload File:

Upload file if needed   (File size must be less than 5 MB. Only pdf.jpg.png is allowed)

Choose File   elpro.pdf

If you need to upload a file, click the "choose file" button and upload the file. (File size must be less than 5 MB. Only pdf.jpg.png is allowed)

Division:

Division *

Barisal   Dhaka

Dhaka

Select the division of event occurrence. If the event happens in more than one division, select the multiple division from the dropdown menu, e.g: Barishal, Dhaka etc.

District:

District *

Barisal   Madaripur

Madaripur ⌄

Select the district of event occurrence. If the event happens in more than one district, select the multiple district from the dropdown menu, e.g: Barishal, Madaripur etc.

Thana/Upazila:

Thana/upazila *

Gournadi Upazila   Madaripur Sadar Upazila

Madaripur Sadar Upazila ⌄

Select the thana/upazila of event occurrence. If the event happens in more than one thana/upazila, select the multiple thana/upazila from the dropdown menu, e.g: Gournadi Upazila, Madaripur Sadar Upazila etc.

Address:

Address

Enter the address of event occurrence.

Data Upload by:

Enter the individual name here who are responsible to upload the data; e.g: Asif Khan.

Data uploaded by *

Asif Khan

Event captured successfull

After completion of all information your Event will captured successfully.

Submit:

Finally click on the **Submit** button.

Event Verification

Verify an event

Description	Uploaded file	Entry date	Upazila	Action
asdf		18/10/2021	Rajshahi CC	Verify
undefined		18/10/2021	undefined	Verify
Thousands of crow died at Ramna		18/10/2021	Ramna Thana	Verify
undefined		18/10/2021	undefined	Verify
undefined		18/10/2021	undefined	Verify
Diarrhea hit Madaripur tremendously. Thousands of people are hospitalized and several childs death occurred.	File	17/10/2021	Madaripur Sadar Upazila,Gournadi Upazila	Verify

- The individual who verifies the event must view the uploaded file carefully and he/she has the authority to verify the event.

New event verification

Source of information

[   ]

Mode of verification

[▾]

Date of verification started

[mm/dd/yyyy   📅]

Date of verification end

[mm/dd/yyyy   📅]

Division *

Barisal   Dhaka

[Please select   ▾]

District *

Madaripur   Barisal

[Please select   ▾]

Thana/upazila *

Madaripur Sadar Upazila   Gournadi Upazila

[Please select   ▾]

Address

[   ]

Description of the event *

[Diarrhea hit Madaripur tremendously. Thousands of people are hospitalized and several childs death occurred.

]

Upload file if needed Prev. file

[Choose File No file chosen   ]

Team organization

[▾]

DSuggestion to facilitate investigation *

[

]

[Submit]

Source of information: Input the source of information here

Mode of verification: Select the mode of verification from the drop down list

Date of verification started: Enter here event verification start date; e.g. mm/dd/yyyy

Date of verification end: Enter here the event verification end date; e.g. mm/dd/yyyy

Division: Select the division of event occurrence. If the event happens in more than one division, select the multiple division from the dropdown menu, e.g: Barishal, Dhaka etc.

District: Select the district of event occurrence. If the event happens in more than one district, select the multiple district from the dropdown menu, e.g: Barishal, Madaripur etc.

Thana/Upazila: Select the thana/upazila of event occurrence. If the event happens in more than one thana/upazila, select the multiple thana/upazila from the dropdown menu, e.g: Gournadi Upazila, Madaripur Sadar Upazila etc.

Address: Enter the address of event occurrence.

Description of the event: Give a description of the event here.

Upload file if needed: If you need to upload a file, click the "choose file" button and upload the file. (File size must be less than 5 MB. Only pdf.jpg.png is allowed)

Team organization: Organize a team from the drop down list.

Suggestion to facilitate investigation: Input your own opinion or suggestion to facilitate the investigation.

Submit: Finally click on the **Submit** button.

List of Users:

This section describes the users' general information. The section is **used for user-specific settings**. The settings are not applied until a user logs into the system. These settings will apply no matter what system a user logs into. The list of users screen is only available for users with the security system requirement

List of Users Screen

On this screen you can see a list with the users for the application, the user selected from the list, and the user logged on the application. You can see the status for the selected user.

On the List of User Screen, Admin can:

- **Registration**: Only after completing the registration procedure a user be featured in this section.

- **Block User:** Red button Block user use to block the particular user.

- **Approve User:** Green button Approve user use to approve the particular user.

User Role Management:

User role management

List of assigned roles of Md. Shakawat Hossain

Role name	Assigned date	Action
event_capture	04/10/2021	✖
event_verification	04/10/2021	✖
admin_role	05/10/2021	✖
event_investigation	04/10/2021	✖
event_risk	21/10/2021	✖

This button will delete the role of this user

Add new role to Md. Shakawat Hossain

Please select ▾   Submit

Select role and submit to add role for this user

In this page admin can decide the role of a user.

- This ✖ button will delete the role of this user.

- From this Please select ▾ dropdown list admin can select user role and

  submit Submit to add role for the user.

Conclusion

The OHEBSDD system was created in response to the growing need for public health, one health, animal health and wildlife information worldwide gathering through sharing and is designed to support health services by facilitating regional and global disease information with the ultimate aim of enhancing early warning systems thanks to timely and reliable disease information. It also provides access to publications, manuals and other resources.

The OHEBSDD system is under continuous development and many new features are being developed including an event surveillance data module. The OHEBSDD database has been used over the past five years covering diseases such as Influenza, H5N1 Highly Pathogenic Avian Influenza, Nipah, and Outbreak. The system will undoubtedly prove useful in facing the big challenge of the emergence of new diseases.