While parts of the world are easing restrictions,欢迎的 return
of social events and travel, others are battling acute and deadly waves
of COVID-19. As the pandemic continues to ebb and flow around the
globe, teams working on public health intelligence (PHI) are facing
various challenges at different times. Yet, lessons learnt by some might
everally benefit others, giving a new literal sense to the expression
“sharing is caring”.

Surveilling mass gatherings such as international sporting events in the
middle of a global pandemic is one such topic. As a new situation to
all, PHI teams are learning and improving by trial and error and sharing
their experiences. In this edition’s spotlight article, experts from WHO
EURO showcase their experience and lessons learnt from the 2020
UEFA European football tournament, while teams from the Americas
and the African region share their approach to conducting trainings
and maintaining engagement in times of COVID. Uganda is featured in
the Community Close Up and Afghanistan reports on its commitment
to strengthen EBS in the country.

With sincere greetings,
The EIOS Core Team
The Union of European Football Associations (UEFA) Euro 2020 football tournament vividly captured the attention of millions over the months of June and July 2021, providing moments of dramatic joy and sadness for fans across the world. The tournament however, presented a unique set of challenges to public health surveillance. Not only taking place during a global pandemic, the event was hosted across 11 different countries, with 50 games played by 24 different teams and fans travelling and mixing across the continent. With each host country in different phases of their pandemic with varied levels of public health and social measures, restrictions and adherence levels, it was clear that there were a number of potential risks to public health given that mass gatherings are known transmission amplifying events.

The primary objective of the enhanced event-based surveillance (EBS) system set up by the WHO Regional Office for Europe (EURO) was to detect signals of public health concern related to the tournament in order to trigger public health action and response as needed. This not only included COVID-19, but other infectious diseases prone to spread during mass events, signals related to other public health threats such as stampedes, as well as deliberate chemical, biological, radio-nuclear and explosive (CBRNE) hazards.

**Combatting ‘noise’**

In the development of the EURO event-based surveillance approach, three key considerations were at the core of the development process: sensitivity, specificity and sustainability. As the tournament was taking place during a global pandemic, they knew that there would be a lot of ‘noise’ given the coverage of the pandemic across the world. It was essential that they didn’t create a system that was unmanageable and inefficient for staff to operate over the tournament. Secondly, it was clear that there would be fluctuations in levels of ‘noise’ over the tournament as potential stories and events emerged, which would require techniques for alleviation.

**Three main methods were used to combat noise:**

1) At its source, the websites, social media accounts and feeds that were part of the EI0S platform were reviewed for appropriateness to the tournament and new sources added to ensure relevant signals were picked up. This included adding sources such as sports specific news sites, football associations and UEFA’s official channels over the month prior to the start of the games.

2) The second method related to the design of specific search criteria in terms of key words and combinations and was implemented before the tournament. In partnership with the EI0S Core Team the team at EURO designed a new set of ‘categories’ specifically for the tournament. This included 6 search components (figure 1) that were combined to pick up relevant signals.

3) They needed good methods of automating processes and outputs to deal with inevitable surges in noise and periods of low specificity. By investing time in developing workflows using RSS feeds and automated tables, the team was able to improve efficiency of triaging and producing daily and weekly outputs.

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**UEFA EURO 2020: LESSONS LEARNT IN DESIGNING EVENT-BASED SURVEILLANCE**

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**Figure 1: Illustrative representation of search group criteria combinations used on the EI0S system**
Information to inform public health

A public facing dashboard was designed and became part of their routine daily updates (figure 2). The tool, designed for use by national public health authorities and members of the public considering attending matches, had three key components: (1) live data on COVID-19 incidence, trends and modelling trajectories and Google mobility data on each host city and its surrounding areas, (2) signposting and information on stadium capacity restrictions and public health and social measures in place and (3) signals of public health concern and news stories related to the tournament picked up by their event-based surveillance system.

Lessons Learnt

1. Partnerships and collaboration

The WHO EURO UEFA task force was responsible for a number of activities across the event with a multidisciplinary membership including country representatives as well as colleagues involved in wider health promotion and risk communication activities. It also partnered with the European Centre for Disease Prevention and Control (ECDC) with daily sharing of signals related to the tournament, while establishing an open channel of communication on urgent matters with the UEFA officials.

2. Start early and invest in automation

Allowing time to develop, tweak and test their event-based surveillance approach proved key in ensuring a balance of sensitivity and specificity. Developing efficient workflows in partnership with the EIOS Core Team also proved very useful in dealing with surges in signals. Finally, robust data management allowed the team to efficiently manage updates to a public facing dashboard.

3. Iterative design

Although time was invested in tweaking the search criteria prior to the start of the tournament, sensitivity and specificity inevitably changed over time depending on stories that occurred. Adopting an iterative approach to dealing with noise can often make epidemiologists feel uneasy in changing their 'methodology' during surveillance activities but in fact should be an essential part of EBS. There should be a continuous process of evaluating irrelevant signals for example, identifying why they were picked up and what could be changed to ensure those types of signals are not picked up in the future.

Conclusion

The UEFA EURO 2020 tournament provided a number of challenges to the surveillance of infectious diseases. The EURO team’s experiences of setting up an EBS system for an international set of mass gatherings occurring during a global pandemic has provided a number of stark lessons learnt that may inform future mass gathering planning and surveillance. 

Beebeejaun, K., on behalf of the WHO Europe Sports Event Task Force
News from the EIOS Core Team

Expansion of the EIOS initiative continued strongly throughout the second quarter. We welcomed four new communities, including three Member States (Lebanon, Sierra Leone and Guinea) as well as an international network of colleagues working on issues around Infant and Young Child Feeding (IYCF). Overall, we onboarded more than 300 new users between April and June alone, which is more than the first six months of 2020 combined, bringing up the number of new users in the first half of 2021 to 576.

This is due in large part to the ongoing subnational expansion in Brazil (more on page 4) but was also helped by new colleagues supporting the regional teams over the past months thanks to funds made available through the Solidarity Response Fund. The EIOS team at the WHO Regional Office for Europe received support from Kazim Beebeejaun to implement enhanced event-based surveillance around the EURO 2020 football tournament, covered in this edition’s Spotlight. Valerie Mize and Verena Poto joined our EIOS focal point in the Regional Office for Africa and were instrumental in implementing the first francophone EIOS system trainings, as well as the first hybrid workshops in the African region (more on page 4).

In April, we kickstarted a number of community engagement initiatives, starting with the first EIOS webinar, in which members of the ECT demonstrated the COVID-19 Twitter dashboard and the map function to provide EIOS system users with a better understanding of these two features and how they can benefit their surveillance activities. More than 60 users participated and following positive feedback, we will be planning more sessions in the second half of the year. Community members are invited to suggest topics of interest, including experiences and challenges they are keen to present themselves and exchange about with the wider community of practice.

In July, representatives across the EIOS community were invited to join a series of global consultations around the new WHO Hub for Pandemic and Epidemic Intelligence (more information on the left) and, last but not least, the community has been invited to share ideas for the agenda of the upcoming EIOS Global Technical Meeting. This year’s GTM is planned to take place as a virtual event from 6-10 December 2021. It is not too late to contribute to the programme so please send your input to the ECT (eios@who.int) before the end of August!

Team updates

At the end of June, we said goodbye to Erin Schillberg, who returned to her position as senior epidemiologist with the Public Health Agency of Canada. Erin had done a fantastic job as Category consultant for the past year and we are now in the process of recruiting her replacement, as well as two new consultants working on sources and taxonomy respectively. On the bright side, we welcomed Ayumi Kodama as administrative assistant, as well as Marc Riner as Project Manager, with a major focus on the KR² initiative (more on page 6).

Coordination Group

- ECDC: Jordi Borrell Pique replaces Thomas Mollet
- GOARN: Seat remains vacant
- PHAC: Kahina Abdesselam replaces Florence Tanguay (on maternity leave)
- WHO: Emilie Peron replaces Sophie Allain Ioos

New WHO Hub for Pandemic and Epidemic Intelligence

In early May 2021, WHO and the German Federal Republic jointly announced the establishment of a new global hub for pandemic and epidemic intelligence in Berlin, Germany. The vision for the new hub is to become a global platform for pandemic and epidemic intelligence, creating shared and networked access to vital multi-sectoral data, driving innovations in data analytics and building the communities of practice needed to predict, prevent, detect, prepare for and respond to worldwide health threats. It will provide a world-class nurturing environment for partners around the world to lead innovations and to attract the brightest minds across disciplines, sectors and countries to work on challenging problems facing epidemic and pandemic analysis and risk management.

As this is fully aligned with the EIOS vision of a world where health threats are identified and responded to so early and rapidly that they have zero impact on lives and livelihood and its guiding principles of collaboration and transparency, the WHO Hub is an opportunity to amplify this joint effort, broaden its scope and accelerate necessary innovations in the space of public health intelligence. Ambitious global initiatives like KR² project (more on page 6) are prime examples of where the hub, as a global centre of excellence, might become an important driver.

Recognizing that building on the foundations which have been laid with the creation of EIOS in 2017 is a crucial prerequisite for the success of the new WHO hub, the EIOS community of practice is one of the key groups taking part in the global consultation process the new Hub’s task force is conducting between June and August. The feedback received as part of this process will help inform the WHO Hub’s strategic plan which is currently under development and will be presented at its inauguration in early September 2021.
Strengthening EBS in Afghanistan

Following an evaluation of its surveillance system in 2019, Afghanistan’s Ministry of Public Health (MoPH) identified the need for including internet news sources to complement the community-based surveillance already in place. Together with the country’s Monitoring, Evaluation, and Health Information System General Directorate, the entity in charge of the country’s National Disease Surveillance and Response System, WHO started implementing the event-based surveillance (EBS) project the following year.

EIOS was identified as a suitable system to fill the identified gap and in March 2021, Afghanistan officially joined the global EIOS community. A three-day training workshop was organized and 22 participants, including colleagues from the MoPH, WHO Country Office, and the International Organization for Migration (IOM), started their EIOS journey. Following the training, Standard Operating Procedures (SOP) for EIOS were developed and integrated into the overall operational guidelines for EBS in Afghanistan. After rounds of inputs from all stakeholders, Afghanistan’s Ministry of Public Health endorsed the final EBS guidelines in June 2021 and started implementing them.

In the context of public health intelligence, cross-border surveillance is of major importance for Afghanistan. Consequently, the MoPH dedicated a board on the EIOS system to searching potential signals from neighboring countries and screens it on a daily basis to detect any possible threats that may cross the border into Afghan territories. This was particularly beneficial in detecting the transmission of the COVID-19 variants of concern in neighboring countries and those in close contact with Afghanistan and helps to advocate for strengthening the gene sequencing capacity in the country.

Currently, Afghanistan’s MoPH is working with the WHO’s Regional Office for the Eastern Mediterranean and the Country Office to set up and deploy a signal management system – another important step to further strengthen the new national EBS system and guidelines.

Brazil is taking EIOS to scale

In the last newsletter, we reported about the kick-off of the EIOS initiative’s first subnational expansion in Brazil. The process, led by the PAHO/WHO office in country with support from the PAHO/WHO Regional Office for the Americas, is still going strong: Since March 2021, the team has provided 3-day system training workshops to 19 groups, comprising a total of 214 Ministry of Health (MoH) professionals from all 27 Federal Units to date. The Brazil MoH remains committed to its goal to implement the EIOS system for EBS at all levels throughout the country and trainings are foreseen to continue until the end of October. In addition, the PAHO/WHO country office in Brazil recently established fixed EIOS “clinic” hours every Friday in which new users, grouped by Federal Units, can ask questions and exchange experiences.

Sierra Leone pilots first hybrid EIOS training

In a continuous effort to further expand EIOS while navigating the various restrictions imposed by the pandemic, the regional teams are trialing ever new ways of bringing new Member States on board in the initiative.

In Sierra Leone, the team from WHO’s Regional Office for Africa (AFRO) piloted the first hybrid EIOS system training at the end of June. For three days, the participants gathered physically at the Bintumani Conference Hall in Freetown while the trainers and facilitators joined them through remote videoconferencing from various locations around the world. Similar to the previous trainings that had been facilitated in the region, the AFRO team partnered with US CDC who provided training on event-based surveillance using internet-based sources on the two days prior to the EIOS workshop.

A total of 34 colleagues, primarily from district and national levels of the Ministry of Health and Sanitation, but also representatives from the Ministry of Agriculture and Forestry, the Ministry of Environment, the local MoH country office, CDC and the African Field Epidemiology Network (AFENET), participated in the training.

Participants actively engaged via interactive mechanisms like polling applications, knowledge competitions, and through group activities to learn how to use the EIOS system to complement their surveillance work.

While the trainers would have preferred to be in Freetown and to be able to interact one-on-one with their trainees, the hybrid format allowed the participants to better support each other throughout the workshop. Faster or more advanced learners were able to help those lagging behind and technical difficulties could be tackled together in order to achieve knowledge competencies collectively. This was a major advantage to fully remote trainings, where participants were connecting individually.

First francophone EIOS trainings

In the second quarter of 2021, the AFRO team also prepared and facilitated the first EIOS system trainings in French! The training materials for both the remote and in-person workshops were translated into French and first used to train the WHO AFRO Dakar Hub emergencies team, which focuses on Chemical, Biological, Radiological and Nuclear (CBRN) and other deliberate events in the Sahel region. The materials were further enhanced based on the group’s feedback prior to training the first Francophone Member State to join the EIOS initiative: Guinea! The Guinea community, represented by the National Agency for Health Security and the WHO country office, was onboarded via a hybrid three-day training conducted in early July.

Lee, T., Mize, V. and Poto, V., WHO AFRO
WHAT'S NEW
in EIOS?

Quarterly system update

While there has been no system release in Q2, there are a number of features the technical team is currently working on. A Requirements and Testing Working Group, including members of various communities, was established in April to support and guide the planning and development process of the EIOS system.

Below is a peak preview of what’s in the pipeline for the next release:

- Inclusion of additional sources from social media platforms including Facebook and Telegram
- Improved geolocation tagging
- Automated classification of articles to determine credibility based on writing style and tone of content
- Complex queries for categories
- Automated summarization of news articles using an abstractive summarization algorithm.

CATEGORY CORNER

We have added five additional Coronavirus variant categories this quarter and continue to update existing Coronavirus variant categories as naming conventions emerge and change. Additionally, we have added translations of over 40 languages to the general Coronavirus Variants category to ensure emerging variants can be detected in more locations.

Additional coronavirus categories have also been added related to public health measures (Curfews, Mask Mandates and School Closures).

Mass gatherings

To support monitoring of UEFA Euro 2020, 12 categories were created to monitor priority diseases in each of 11 host countries and among fan zones.

A new category for COVID-19 Tokyo Olympics was released mid-July to support related EBS activities. It combines the coronavirus category with keywords related to the 2020 Olympic Games, including the names of specific sports venues that will be used in the competition. You can find this category in the Mass Gathering folder either in your main tree or as a sub-folder within the Biological folder, depending on your community’s settings.

If you think a category you are interested in could use some refinement to better support your monitoring objective, please do not hesitate to contact us!

Using social media for PHI

The ECT is setting up a research study to evaluate the utility of social media data for PHI, specifically in the areas of COVID-19 variants and vaccinations, using data accessed through the Sprinklr platform. Understanding how social media data can contribute to these areas for event-based surveillance activities (EBS) such as early detection, monitoring of ongoing events and contextual factor analysis will help to determine what resources the EIOS initiative should dedicate to social media data, and specifically which platforms, for public health intelligence activities. As a first step, development of metrics reports for analysis has begun and the research is expected to run over several months.

Signal App

The ECT, together with colleagues from the WHO Information Management and Technology (IMT) team, JRC and Relief Applications, is working on improved signal management capabilities for COVID-19 and beyond.

As a first step, requirements were gathered from WHO PHI teams at HQ and the regional offices with the aim to design a module that can be connected to the EIOS system, which enables and facilitates joint signal management. A first iteration of the signal management app is being finalized and should be ready to be piloted by the WHO PHI teams in a few weeks to ensure that the app function as expected. Eventually, pending user testing and results of this first pilot app, this module will be integrated in the EIOS user interface and be made available for use and custom adaptation to other communities.
KR²: Knowledge Representation and Reasoning

Taking PHI to the next level

The fact that collaboration within the global public health community (including Member States, international organisations, research institutes, academia, the private sector and civil society) and the timely sharing of information are crucial prerequisites for achieving early warning and response objectives, has been starkly demonstrated once again by the COVID-19 pandemic.

To tackle the challenges related to connecting different datasets around the world to help answer complex public health questions and generate actionable insights, the EIOS Core Team initiated the Knowledge Representation and Reasoning project, or in short: KR².

The vision

This initiative will explore the augmentation of public health intelligence capabilities across the global community of practice, including infrastructure and solutions for public health information and knowledge sharing, interoperability of public health intelligence systems and contextual learning and decision making. It aims to create a continuously evolving semantic network of distributed data for sharing information and knowledge between and across humans and systems.

Building a multidisciplinary team

In the first phase, the project will focus on proving the concept by identifying some key datasets of interest related to COVID-19, designing and implementing a data model, using it to automatically detect anomalies and answer a few key questions.

To realise this will require a strong, focused multi-disciplinary collaboration and the project team is currently in the process of reaching out to COVID-19 domain experts, knowledge graph specialists and more traditional IT teams to engage on the project.

HOW MANY DIFFERENT ENTITIES ARE REPRESENTED IN YOUR COMMUNITY?

To date, six entities are represented within the Uganda Community, including the Ministry of Health (MoH) and its Public Health Emergency Operations Centre (PHEOC), the Ministry of Agriculture Animal Industry and Fisheries (MAAIF), the Infectious Diseases Institute (IDI), the African Field Epidemiology Network (AFENET) as well as WHO and the CDC.

WHAT DO YOU USE EIOS FOR?

We use the EIOS system to conduct media scanning for public health threats and events in the country and the East and Central African region. These public health threats range from infectious disease outbreaks affecting humans or animals, over environmental hazards to radiation, poisoning, etc. We also use EIOS to scan for updates on the COVID-19 pandemic including new variants of concern and updates on vaccine technologies, their acceptability and global coverage.

WHAT DO YOU LIKE BEST ABOUT EIOS?

One of our favorite things about EIOS is that we are able to pick up early information on public health events of (potential) international concern that are particularly occurring in countries that share a border with Uganda or are generally located in the East and Central African region. Signals are usually picked up faster/before the formal IHR notifications are received from the affected countries. We are thus able to rapidly implement risk assessments and develop incident action plans for mitigation of the potential threats.

Name of Community: Uganda
Active on EIOS since: March 2020
Number of members: 59 in total, of whom 17 use the system on a regular basis

Compiled by Wilbrod Mwanje, Ministry of Health Uganda