Public Health England

Protecting and improving the nation's health

Looking for a needle in a haystack?

The PHE approach to epidemic intelligence

Mandy Walsh, PHE National Infection Service

Public Health England

The PHE approach to epidemic intelligence

- Rationale
- Approach
- Processes for signal detection and verification
- Interpretation
- Risk assessment
- Communication
- Challenges

Public Health England

Why do we look?

- Awareness of emerging threats
- Potential risk to the UK population/British interests
- Preparedness and planning
- Inform dynamic risk assessment
- High consequence infectious diseases preparedness
- For UK government departments - more anticipatory, earlier decision making and reducing impacts

Public Health England

What do we look for?

- Identification of a new or emerging infection
- Outbreaks of epidemic potential, international and national
- New aetiology of a known disease identified
- Reports of undiagnosed illnesses
- Zoonoses, possible zoonoses and important animal diseases outbreaks in the UK/internationally (eg Avian influenza)
- Relevant epidemiological reports on outbreaks
- Relevant new or updated national or international public health policies
- Journal articles to inform evidence base for guidance development

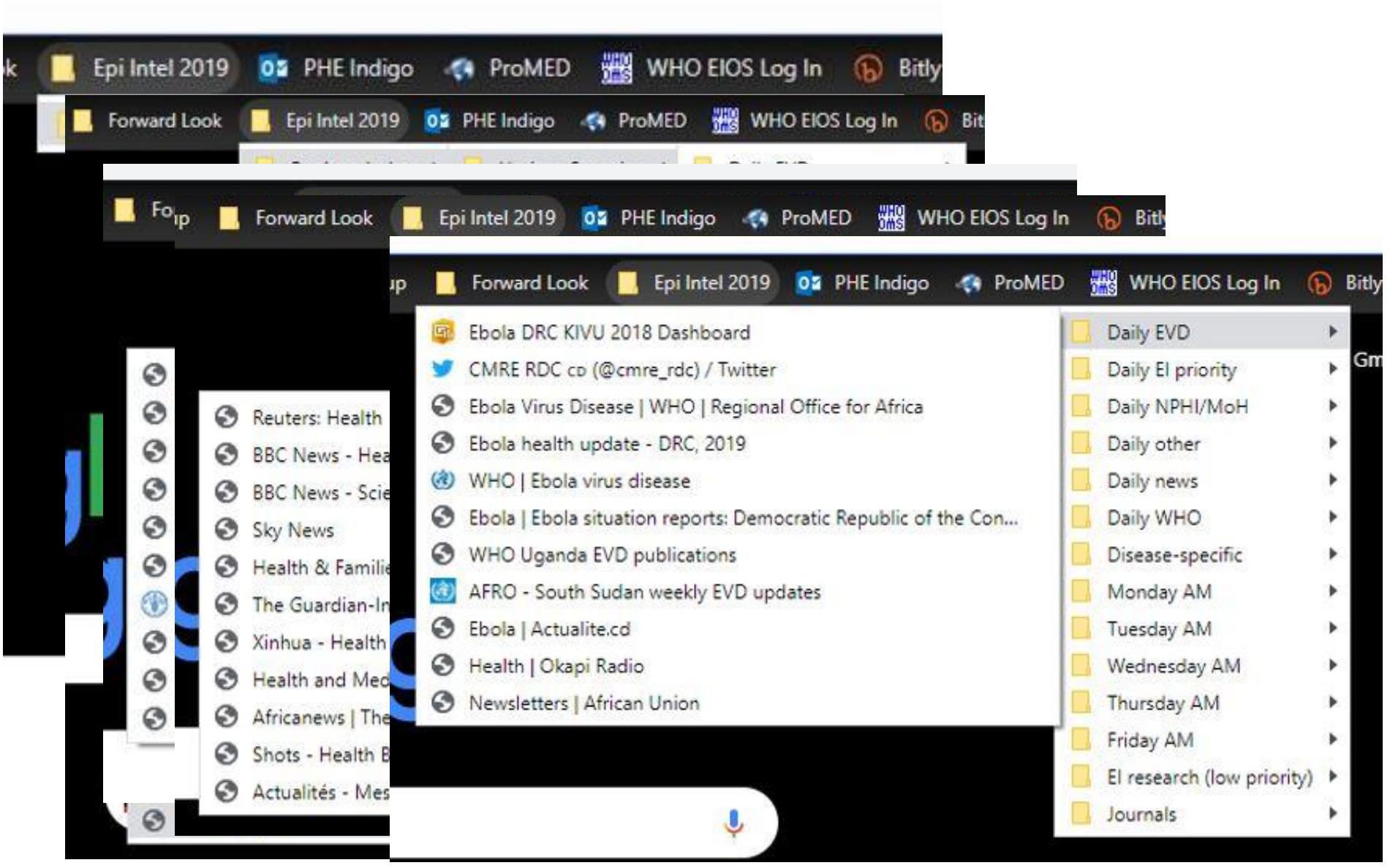
Where do we look?

- ProMED-mail
- CIDRAP
- Flu & Ebola Map | Virus & Contagious Disease Surveillance
- WHO | Disease Outbreak News (DONs)
- Falling Rain- Maps of towns and cities
- Newsroom | Florida Department of Health
- OIE World Animal Health Information System
- UNICEF press centre
- Cayman Islands MoH
- Influenza at human-animal interface
- Hurricane Matthew
- Haiti - Cholera
- NEJM — Zika Virus
- Zika Map | Virus & Contagious Disease Surveill
- Brazil - epi bulletin
- Zika | CIDRAP
- GPEI - polio this week
- WHO EMRO | Situation reports | Yemen-infocus
- Zika in Texas – Information for News Media
- Zika in Texas - case updates
- Avian influenza in wild birds: winter 2016 to 201
- WHO | Neglected tropical diseases
- Nigeria Centre for Disease Control - lassa fever
- South-East Asia Regional Office
- Western Pacific Region
- Regional Office for Africa
- AFRO - Epidemic and Pandemic Alert and Response
- WHO/Europe | Home http://www.euro.who.int/en/home
- WHO EMRO
- PAHO WHO | Pan American Health Organization | World Health Organizati
- WHO/Europe | Media centre
- Press releases - WHO | Regional Office for Africa
- WPRO | News releases

- FAO H7N9 situation update - Avian Influenza A(H7N9) virus - FAO Emergency Prevention System for Animal Health (EMPRES-AH)
- Africanews | The latest African, international news, the latest information and developments
- WHO H5N1 table
- Philippines MoH Press

- EID Ahead of Print
- HPT look-up
- epidemiological Resource Center
- Health & Families | Lifestyle | The Independent
- Singapore Ministry of Health
- Madrid MoH CCHF
- Singapore - Zika Clusters
- Zika sequences from Miami mosquitoes | Andersen Lab

How do we look and verify?



Epidemic intelligence log

Incident	Country	Designation	Date posted	Date ente	Initial So	Informati	Link	Description of incident
Dengue - autochthonous cases	France	Follow-up	09/10/2019	10/10/2019	PACA	Regional gov	https://www.paca.ars.sante.fr/system/files/2019-10/VeilleHebdo-Paca-201940.pdf	[*Report in French*] as of 9/10, 7 autochthonous cases have been identified in Alpes-Maritimes: 5 confirmed cases and 2 probable cases. The start dates of the signs are between 01/08 and 21/09 (Figure 1). All live in Vallauris in the same neighborhood. These are 3 men and 4 women aged 6 to 73 years. No cases were hospitalized. There was no vector control treatment following the reporting of this imported case due to the lack of vector identification during the entomological survey.
EVD - daily update	DRC	Follow-up	09/10/2019	10/10/2019	Gov	Gov	https://us3.campaign-archive.com/?u=b34a30571d429859fb249533d&id=08a4759f5d	**+ 1 new confirmed case** - 1 in Mandima **As of 8 October 2019:** Cumulative 3,207 (3,093 confirmed and 114 probable) Suspects 455 Deaths 2,144
Measles	DRC	Follow-up	09/10/2019	10/10/2019	ONT	UNICEF	https://www.unicef.org/drcongo/en/press-releases/measles-deaths-democratic-republic-congo-top-4000	As measles deaths in the Democratic Republic of the Congo top 4,000, UNICEF rushes medical kits to health centers and vaccinates thousands more children Since January, 203,179 cases of measles have been reported in all 26 provinces of the country, and 4,096 have died. Children under the age of five represent 74 percent of infections and nearly 90 per cent of deaths. The number of measles cases in DRC this year is more than triple the number recorded for all of 2018.
MERS	Saudi Arabia	Follow-up	09/10/2019	10/10/2019	EMRO	EMRO	http://www.emro.who.int/health-topics/mers-cov/mers-outbreaks.html	MERS SITUATION UPDATE - September 2019 At the end of September 2019, a total of 2468 laboratory-confirmed cases of Middle East respiratory syndrome (MERS), including 851 associated deaths (case–fatality rate: 34.4%) were reported globally; the majority of these cases were reported from Saudi Arabia (2077 cases, including 773 related deaths with a case–fatality rate of 37.2%). During the month of September, a total of 4 laboratory-confirmed cases of MERS were reported globally. All the

Public Health England

Risk from what and to whom?

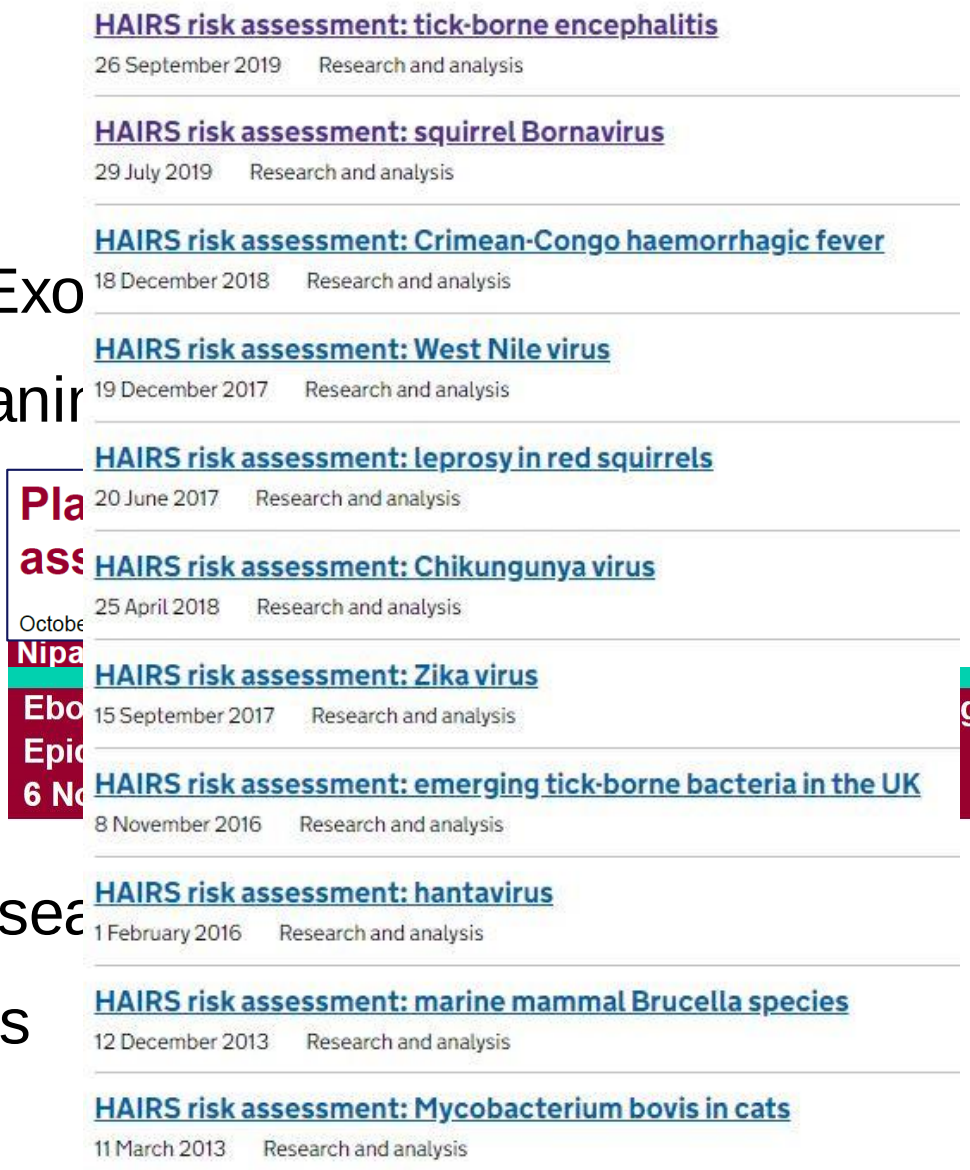
What threat?

- Infections: which ones? Exo
- Infections at the human-anir potential zoonosis?

Where in the world?

To whom?

- Risks to UK population
- Risk to UK interests oversea
- Risks to other populations



Public Health England

Human-Animal Infections and Risk Surveillance group (HAIRS)

75% of emerging infections zoonotic in origin

- UK multi-agency cross-government horizon scanning and risk assessment group.
- Meets monthly
- Forum to identify & discuss infections with potential for interspecies transfer
- Undertakes routine horizon scanning for new and emerging infections
- Undertakes risk assessments of new and zoonotic agents in terms of their potential risk to the UK population

https://www.gov.uk/government/collections/human-animal-infections-and-risk-surveillance-group-hairs

Public Health England

EI Risk Assessment process

Risk = Probability and impact (and context)

2 detailed algorithms have been developed

1. Zoonotic potential
2. Risk to the UK population

Also - risk statements/narrative

Any assessment is dependent on available evidence; any conclusions made must be reassessed as new information becomes available (e.g. seroprevalence data, or asymptomatic cases)

Public Health England

Expected Actions

following assessment of the risk from an incident or a new/emerging pathogen

Probability/Impact	Expected actions
Very low	The risk of such an event is often deemed acceptable without the implementation of mitigation strategies.
Low	Implementation of mitigation strategies should be considered in terms of the efficacy, impact and practicability of potential measures. Continue to monitor.
Moderate	Mitigation strategies should be reviewed immediately and escalation should be considered.
High	Control measures and escalation should be implemented without delay and action groups formed.
Very High	Public health emergency. Considerable and immediate effort to reduce the impact and/or prevent the event is required. Urgent escalation is essential.

Outputs – Assessment & Communication

Assessments

- Informal: discussion within the office to determine action
- Formal: risk to UK public health from international outbreaks
- HAIRS risk assessment to determine zoonotic or UK public health risk

Communication

- Daily 9:15 meeting – Department Heads, Duty Doctors & Comms
- Daily summary for PHE, cross-government & other parts of UK
- Weekly National Teleconference
- Weekly International Natural Hazard forward look (multi-agency)
  - *human & animal outbreaks, volcanoes and weather*
- *Ad hoc* reporting
- Monthly "Emerging Infections Summary" *(public)*
- Monthly High Consequence Infectious Diseases summary *(public)*

Public Health England

Challenges

Knowing what it is you're looking for

Defining what's relevant

How much is enough?

Training & staff resources: experience, consistency

Interpretation