European Centre for Disease Prevention and Control

Digital advances in disease surveillance and extended remit of ECDC

Pasi Penttinen
ERS presidential summit  - 4 June 2020

I have no financial conflicts of interest on this topic, other than being staff of ECDC
2003

SARS Coronavirus

(cc) milolovitch69, via flickr.com

(cc) Chris & Lara Pawluk, via flickr.com

(cc) Jason.Tabrias, via flickr.com
ECDC – current mission and mandate

To identify, assess and communicate current and emerging threats to human health posed by infectious diseases.

ECDC – current mission and mandate

Disease Surveillance & Epidemic intelligence

- Response support & Risk assessments
- Preparedness & capacity strengthening
- Scientific advice & guidance
- EU and external stakeholders & Country support
- Public health training
- Communication

Vaccine-preventable diseases and Immunisation

- Sexually transmitted infections, Blood-Borne Viruses and Tuberculosis
- Antimicrobial resistance and healthcare-associated infections
- Emerging, Food and vector-borne diseases

EU and external stakeholders & Country support

Public health training

Communication
Continuous threat monitoring (Round Table meeting)
Public Health Event level 2
as of 31 January 2020

ECDC works 24/7 during PHE 2
Proposed new mandate for ECDC:

- **Epidemiological surveillance** enabling real-time surveillance;
- **Preparedness and response** planning, reporting and auditing;
- Provision of **non-binding recommendations** for risk management;
- Monitoring and assessing **health systems capacity** for diagnosis, prevention and treatment of specific communicable diseases as well as patient safety.
- Capacity to mobilise and deploy **EU Health Task Force** to assist local response in Member States;
- Build a network of **EU reference laboratories** and a network for **substances of human origin**.
- Reinforce the contribution to the EU commitment to **global health security preparedness**.
History of surveillance solutions at ECDC

- **1980s and 90s** Dedicated surveillance networks
- **2005** ECDC founded
- **2007 Database live**
- **2007/11** Transfer of network coordination and historical data to ECDC
- **2007/11** ECDC founded
- **2015/21** Surveillance Systems Reengineering
- **2017/21** EPHESUS
Epidemiology in surveillance: Describe time, place and personal characteristics
The European Surveillance System (TESSy)

- Purpose-built integrated database for all diseases under EU surveillance
- Web interface, password protection
- Functions:
  - Data upload and validation
  - Customised data download
  - Cluster search
## Automated surveillance outputs

<table>
<thead>
<tr>
<th>TESSy reports</th>
<th>Surveillance atlas</th>
<th>Dashboards</th>
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<tr>
<td><strong>Restricted</strong></td>
<td><strong>Public</strong></td>
<td><strong>Public</strong></td>
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<tr>
<td><strong>Static</strong></td>
<td><strong>Limited interactivity</strong></td>
<td><strong>Interactive</strong></td>
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<td><strong>Costly customization</strong></td>
<td><strong>Costly customization</strong></td>
<td><strong>Easy customization</strong></td>
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Customisation of automated outputs: Risk factor analysis for COVID-19
EuroMoMo.eu – dynamic mapping of excess mortality
Epitweetr – monitoring social media
Vibrio monitoring in the Baltic sea

Evaluation of the suitability conditions for some *Vibrio* species in the Baltic sea

Few cases a year

Tool with salinity and water temperature
Providing map creation tools for stakeholders: ECDC EMMA
Digital proximity tracing complements conventional contact tracing

Kretzschmar et al. The Lancet Public Health.

Koronavilku.fi
The overall iterative process of a public health surveillance system

- **Data Collection**
  - Data source bias: limited platforms/population and content bias/misinformation/small sample size
  - Data collection: limited to specific hashtags and manual/subjective search term definitions, language limitations, and limited data types.

- **Dissemination/Action**
  - Public health actions: less than 1% utilized their results for public health actions

- **Planning/Design**
  - Scope (theme): lack of studies on disease burden, occupation safety, and nutrition.
  - Scope (audience): no study on vulnerable populations.
  - Scope (method): Lack of infoveillance studies

- **Evaluation**
  - Evaluation method: lack of sensitivity and representativeness analysis, lack of longitudinal evaluation

- **Data Analysis/Interpretation**
  - Data Analysis: lack of supervised information extraction, source identification (i.e., self-reported vs. general statements), lack of geo-spatial analysis
  - Data Interpretation: lack of longitudinal analysis

Thank you for notifying infectious diseases!

Thank you for your attention!

Thank you for providing support with slides and content to ECDC colleagues: Julien Beauté, Antonis Lanaras, Lina Nerlander and co