

Establishing a novel European hospital surveillance platform in response to a newly emerging infection lessons from the I-MOVE-COVID-19 hospital network

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Introduction

The first signal of a new infection is often severe cases presenting at hospital. Enhanced surveillance of these cases is critical to learning more about disease epidemiology and patient outcomes. In response to the emergence of SARS-CoV-2, the Influenza-Monitoring Vaccine Effectiveness (I-MOVE) network, founded in 2007, expanded to establish the I-MOVE-COVID-19 Consortium in February 2020. The Consortium's surveillance objectives included using pooled data to describe clinical and epidemiological characteristics of hospitalised COVID-19 patients across Europe, with the aim of contributing to the knowledge base, guide patient management, and inform the public health response.

What is involved?

- A standardised protocol and dataset for collection was agreed, April 2020.
- Data are submitted at agreed time intervals (now quarterly) and generated using different types of hospital COVID-19 surveillance:
 - ▶ **Register-based surveillance:** data are generated by linkage of routine hospital and infection datasets.
 - ▶ **Questionnaire-based surveillance:** bespoke paper or electronic questionnaires are used to collect the data.
- The main variables collected include basic demographics, clinical details (e.g. chronic conditions, ventilation status) and outcomes (length of hospital stay, intensive care unit / high dependency unit admission, mortality).
- Main outputs of the surveillance network include the COVID-19 European hospital surveillance bulletins and quarterly network meetings.

Table 1 Countries participating in I-MOVE-COVID-19 European hospital surveillance, the surveillance system and the total number of SARI cases reported between 01 February 2020 and 30 June 2021

Country	Participating hospitals	Number of cases (%)
England (EN)	All hospitals, including mandatory reporting from ICUs/HDUs	58,345 (59.0%)
Scotland (SC)	All hospitals	25,301 (25.6%)
Albania (AL)	Two hospitals	1,308 (1.3%)
Belgium (BE)	One hospital	1,348 (1.4%)
France (FR)		
Two sites:		
FR-R (REIVAC)	Five hospitals	1,527 (1.5%)
FR-V (VIVI)	Two hospitals	20 (0.0%)
Lithuania (LT)	Two hospitals	687 (0.7%)
Portugal (PT)	Three hospitals	779 (0.8%)
Romania (RO)	Two hospitals	505 (0.5%)
Spain (ES)		
Two sites:		
ES	Two hospitals	3,529 (3.6%)
NA	Navarra region: six hospitals	5,464 (5.5%)
Total		98,813

Lessons Learned

Strengths and challenges identified through the I-MOVE-COVID-19 hospital network meetings during the development of a European level COVID-19 hospital surveillance system.

Challenges

Data	Infrastructure	Timeliness	Sustainability
Streamline number of variables required for European level reporting	Development of appropriate IT infrastructure; resources, IT support, training	Ensuring timely analysis during pandemic settings when time and resources are limited	Ensuring sustainability of the surveillance system as it relies on ad-hoc pandemic funding
Ensuring data quality: Variables in pooled dataset with low levels of completeness	Automation of electronic systems; automated scripts, coding skills and resources	Surveillance system not in real-time: time delays such as delay of diagnosis, notification and reporting	Ensuring sufficient resources for continuation of the surveillance
Information governance: Coordination of ethical approval for data collection			
Representativeness: harmonising collected data at European level as some sites only have few hospitals involved whereas other sites submit national data which limits the ability to compare data between sites			A cost-benefit analysis could be helpful in the decision-making process on continuation of the surveillance system by outweighing the costs and performance of the system

Next steps

- Publish final COVID-19 European hospital surveillance bulletin in March 2022 using data to the end December 2021
- Surveillance evaluation project October 2021 to March 2022 coordinated by Public Health Scotland
 - ▶ **Quantitative** data collection:
 - Online anonymised web-based questionnaire
 - Additional analysis using the pooled datasets
 - ▶ **Qualitative** data collection:
 - Online anonymised web-based questionnaire
 - Group interviews
 - Review of study protocols and documentation
- ▶ Publish final recommendations and lessons learned in March 2022 on adapting existing hospital networks to rapidly support surveillance during a public health emergency

Who is involved?

Nine countries with a total of eleven study sites participate in the surveillance; this includes 23 hospitals across six EU Member States (Belgium, France, Lithuania, Romania, Spain and Portugal), Albania, and all hospitals in England and Scotland.

Figure 1 Map of countries participating in I-MOVE-COVID-19 hospital surveillance

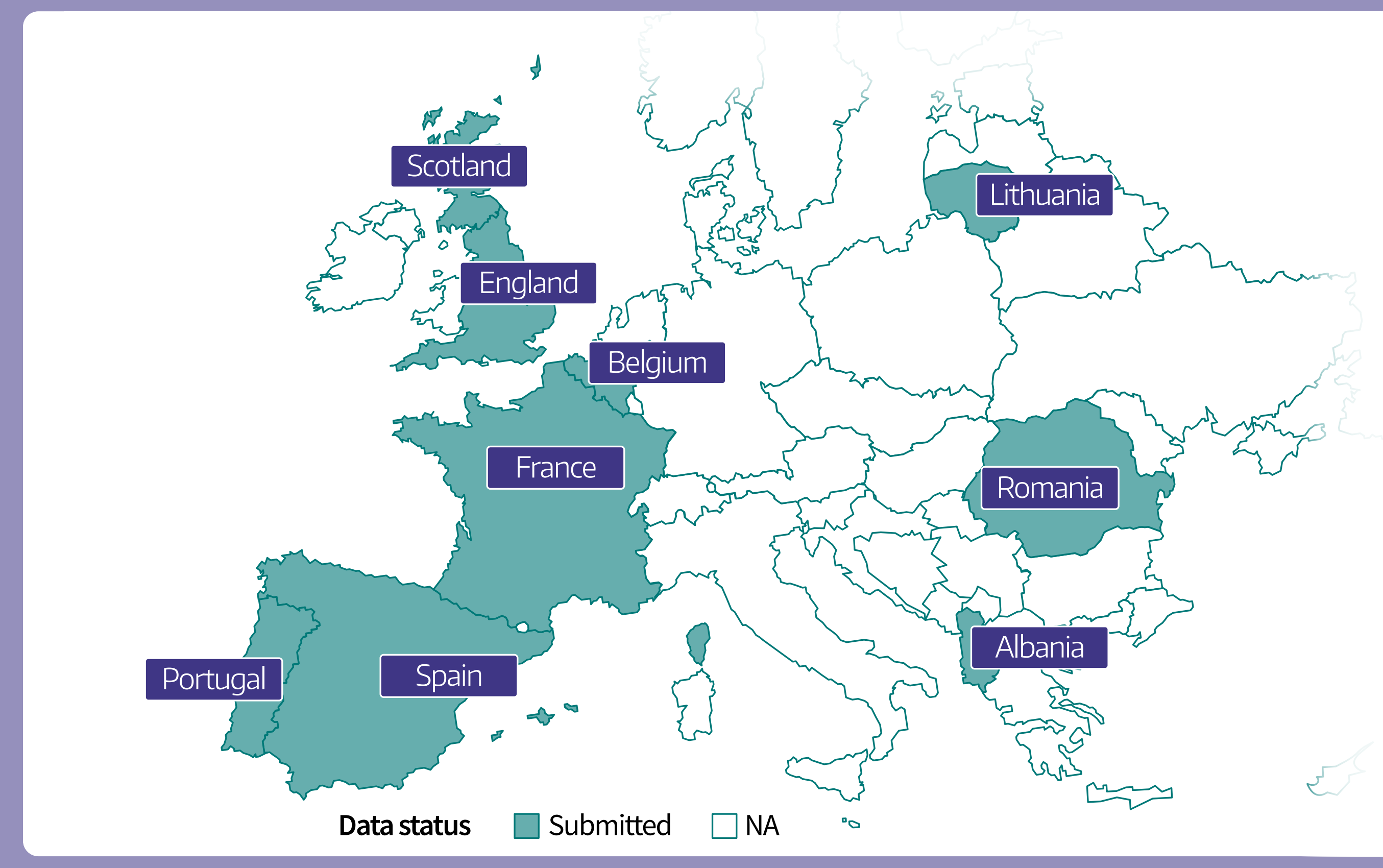
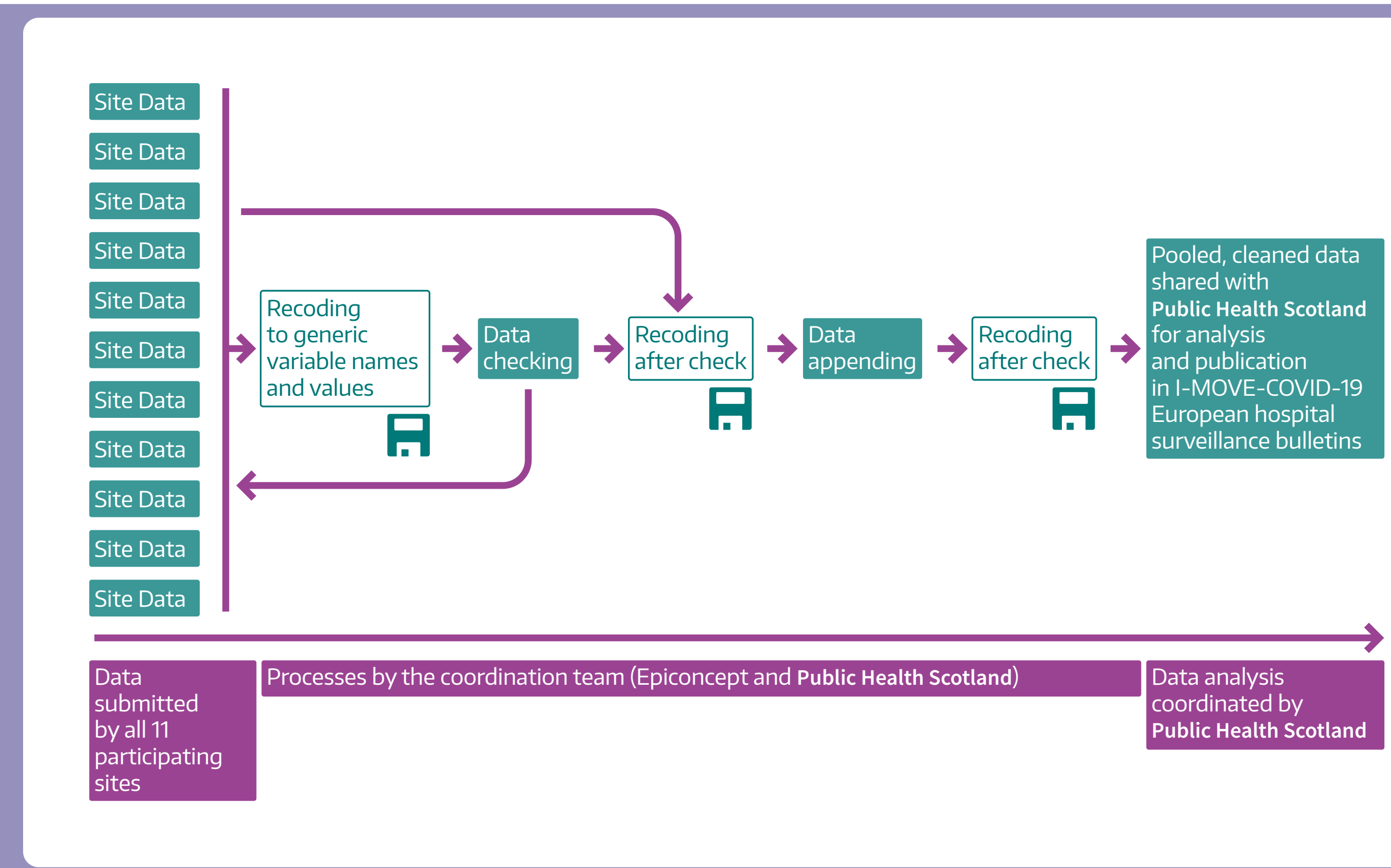


Figure 2 Dataflow of the I-MOVE-COVID-19 Hospital Surveillance Network



Strengths

- ✓ Incentive for collaboration at national level between hospitals, public health institutes and laboratories.
- ✓ Strengthen capacity to control SARS-CoV-2.
- ✓ Different countries and participating sites can learn from each other and share best practices and experiences.
- ✓ Allows comparison across different participating sites and compare situations albeit limited due to representativeness challenges across the participating sites.
- ✓ Surveillance at European level increases the power of the overall data which allows to detect and monitor trends and outbreaks that would otherwise not have been identified.
- ✓ Data collected at European level allows identification of risk population groups and ensure that appropriate and relevant interventions can be taken.
- ✓ Harmonised and efficient European surveillance systems benefits both the individual sites and other important stakeholders at local, national and international level including public health and clinical professionals and policy makers.

Summary

- A European level COVID-19 hospital surveillance system was established during the pandemic.
- This provides better powered data which can be used to support the justification for public health action and effective infection prevention.
- There were challenges: including differences in national surveillance systems, data timeliness, accessing information governance and ethical approvals but valuable lessons have been learned.
- Despite the challenges, this European collaboration has strengthened hospital surveillance at national level and participating sites are supportive of continuing this surveillance.
- The surveillance evaluation project will provide further recommendations on how existing hospital networks can be adapted to rapidly support surveillance during public health emergencies.

Please see poster abstract 171 for the presentation of data and analyses from this European surveillance system: *Enhanced surveillance of COVID-19 in secondary care in Europe: a tale of two waves.*

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