



Current and future threats for Europe

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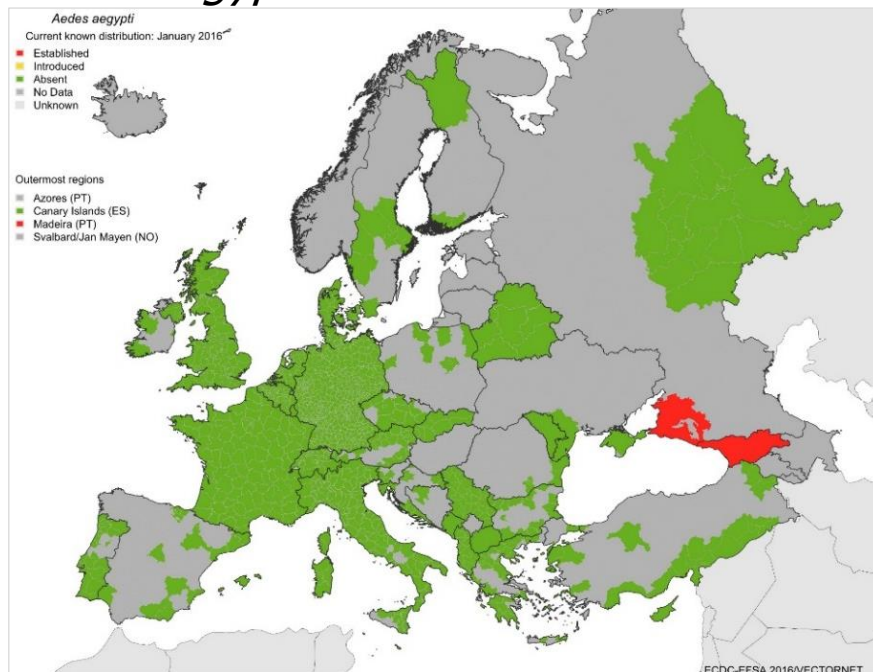
Ebola research gaps

- **No antiviral drugs or vaccines** for treatment or prevention of Ebola authorised as of September 2016
- Why no vaccines licensed?
- No specific treatment (some use of convalescent sera)
- Operations research programmes **in resource-limited setting** (e.g. WGS to investigate transmission chains in real time)
- Presence of virus in sperm known but **role in sexual transmission** not recognized in previous emergences
- PPE performance / **ease of use**
- **Social science** / resistance of community (learn from vaccine hesitancy?)

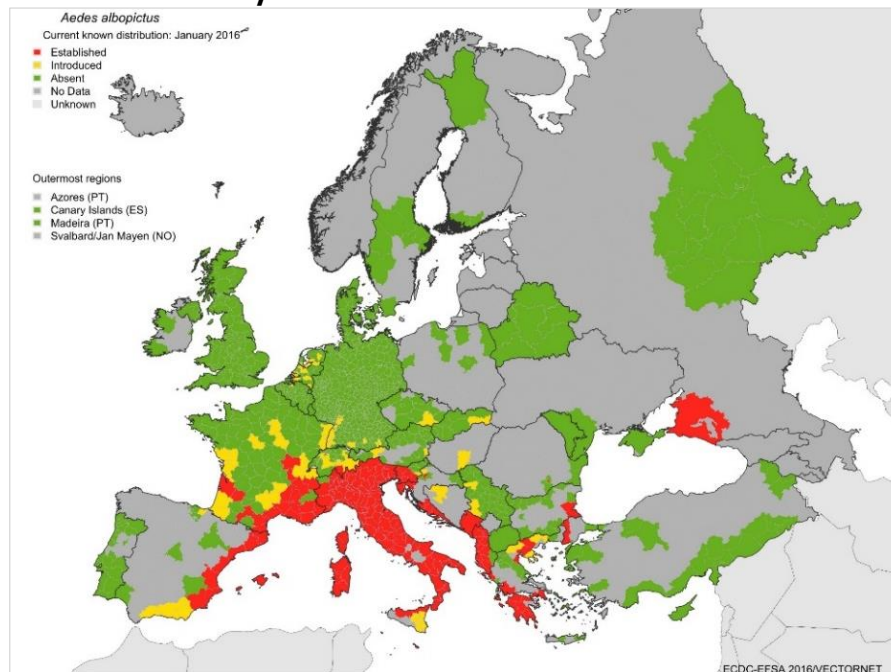
Zika: *Aedes* mosquitoes in Europe

Aedes mosquitoes distribution as of January 2016

Aedes aegypti



Aedes albopictus



Established

Introduced

Absent

No data/unknown

Map updates available from:

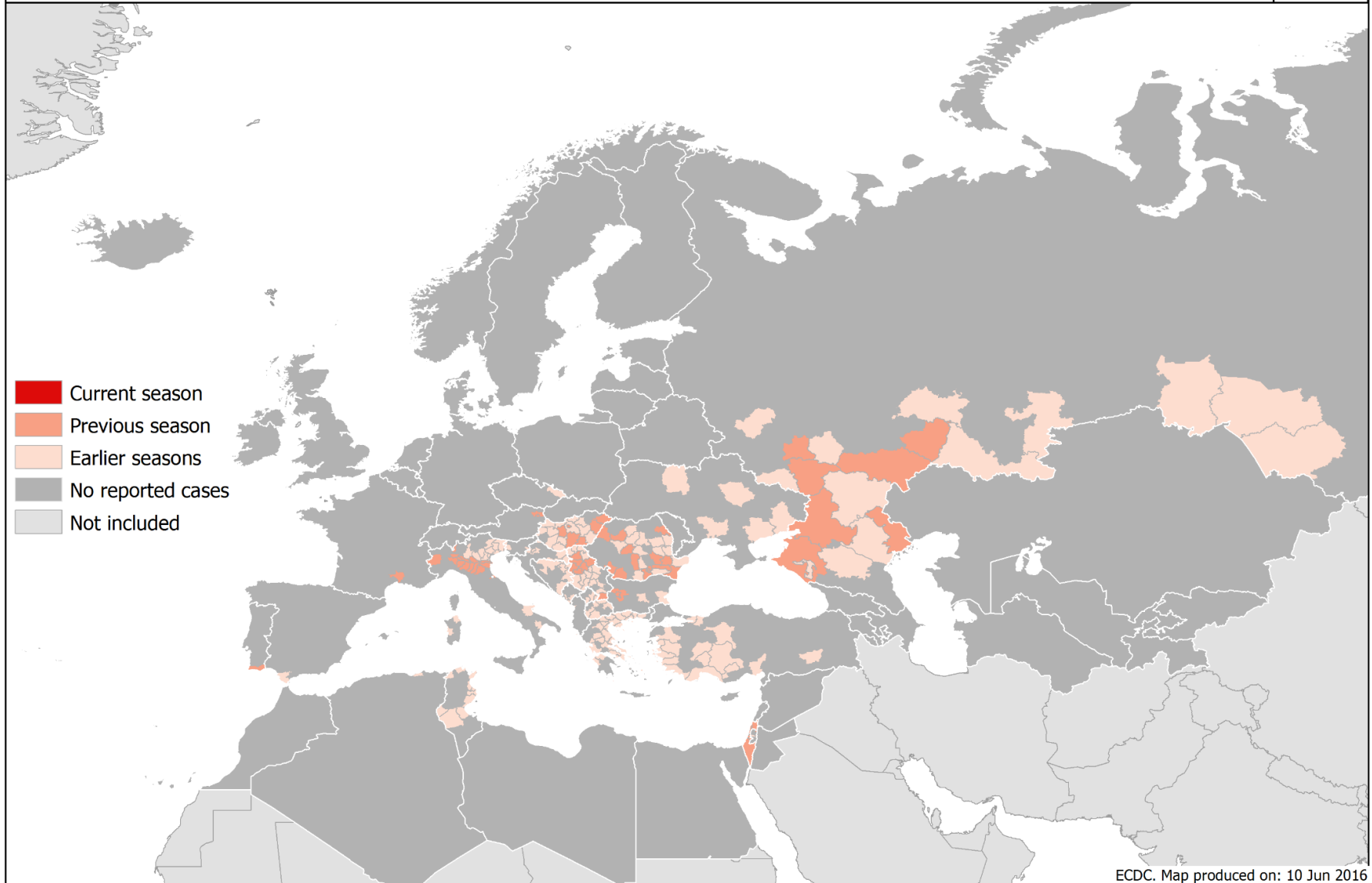
http://ecdc.europa.eu/en/activities/diseaseprogrammes/emerging_and_vector_borne_diseases/Pages/VBORNET.aspx

Zika research gaps

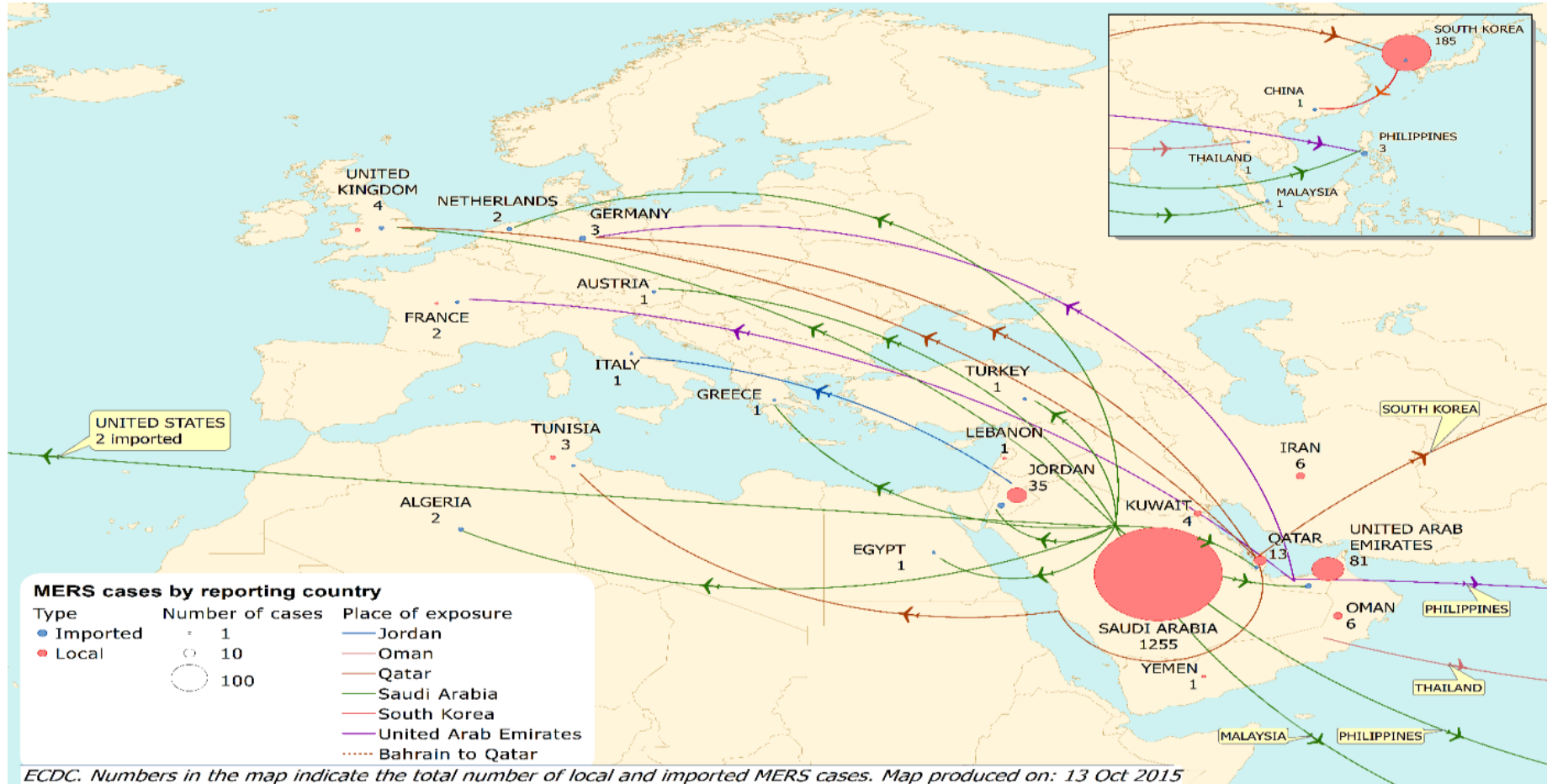
- **No antiviral drugs or vaccines** for treatment or prevention of Zika virus infections currently authorised and available
- **Criteria for interpreting of diagnostic tests** needed (serology: cross reactions, impact of vaccination – when available; PCR ≠ detecting replicating virus)
- Mosquito control: **effectiveness of different methods**
- **Point-of-care tests** for frontline providers for accurate diagnoses

West Nile Fever

Distribution of West Nile fever cases by affected areas, European region and Mediterranean basin
Transmission season 2016 and previous transmission seasons; latest data update 9 Jun 2016

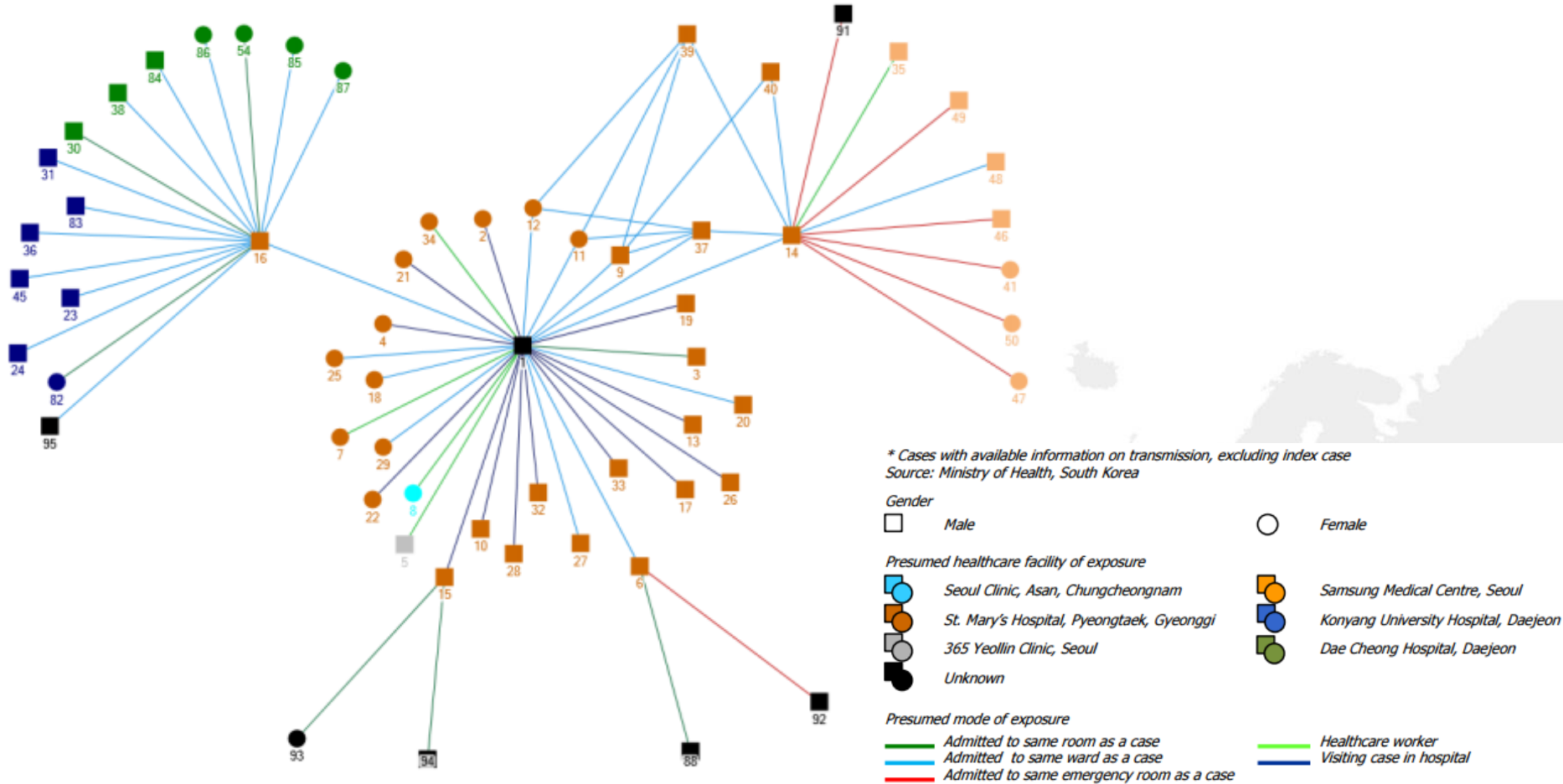


MERS CoV: Distribution of confirmed cases by place of probable infection as of 13 October 2015 (n=1 616)



MERS coronavirus in South Korea

Transmission chain of 59 confirmed MERS-CoV cases in South Korea, reported between 20 May and 10 June 2015



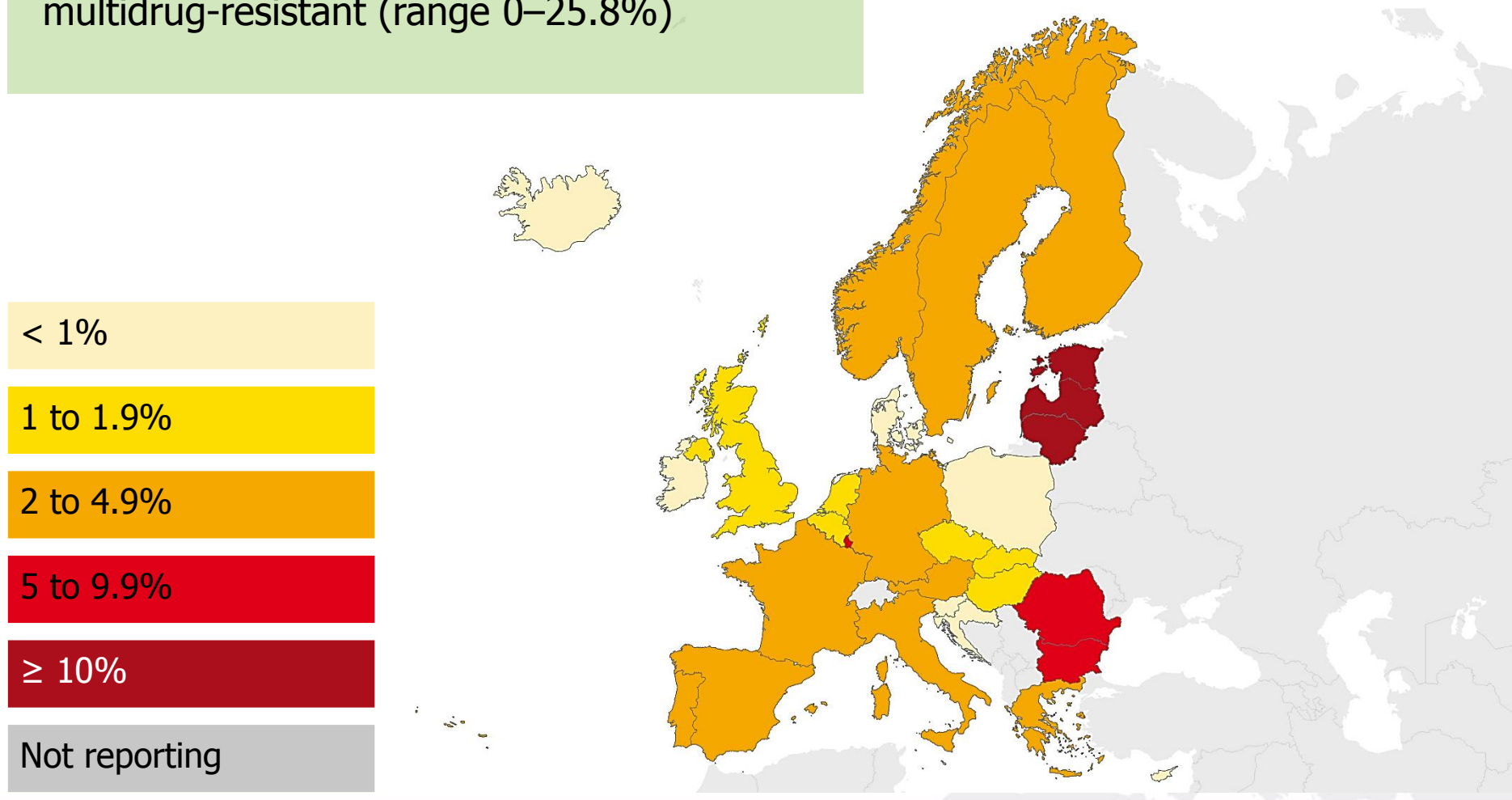
Research gaps

- Operations research for early stages of transmission: why nosocomial transmissions still occurs despite all measures and awareness?



Multidrug-resistant TB, EU/EEA, 2014

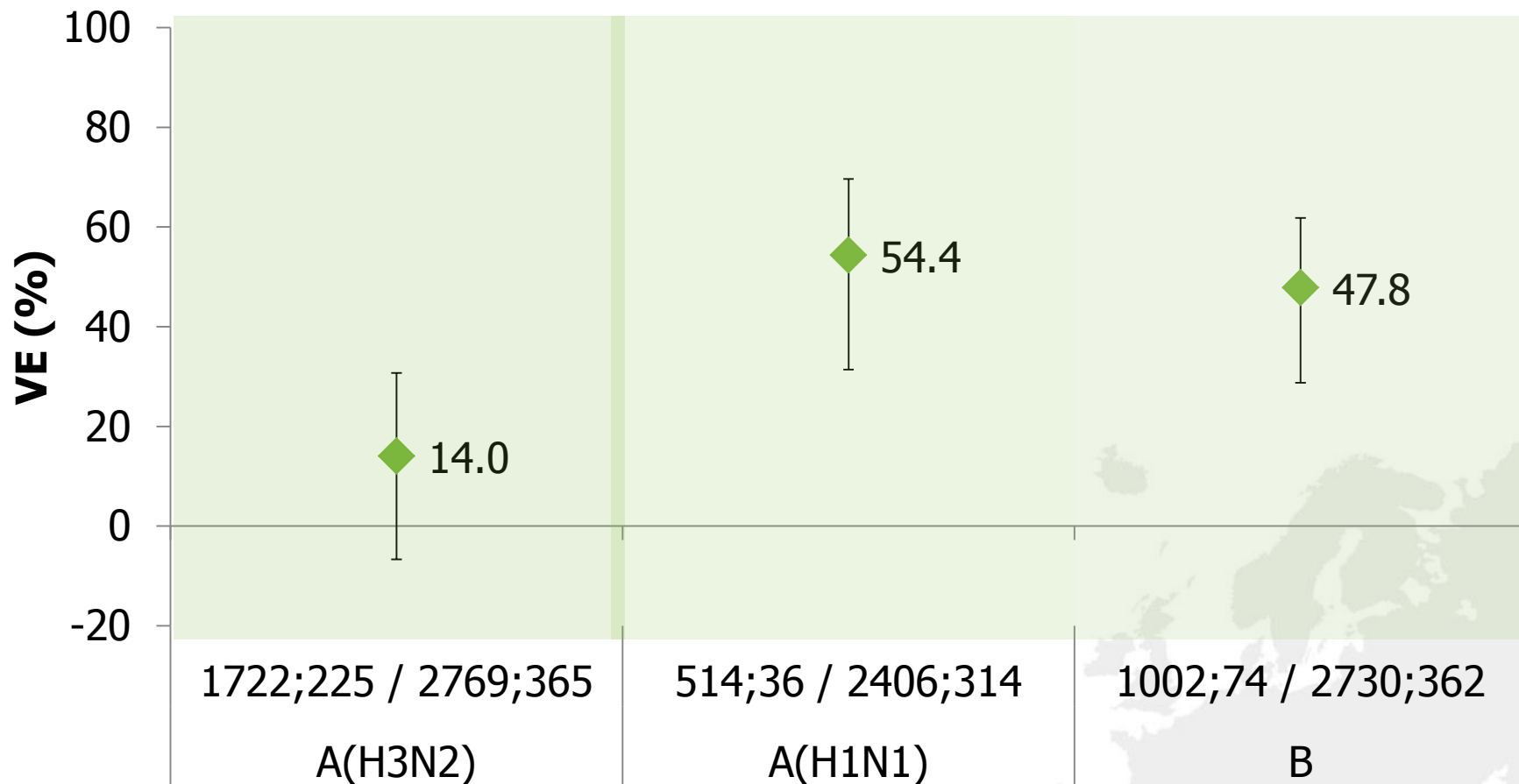
4.0% of TB cases with DST* results were multidrug-resistant (range 0–25.8%)



Research gaps in TB

- MDR TB: Shorter and easier treatment. Tx for those in contact with MDR TB cases and are infected
- **Latent TB infection:**
 - tests to identify who will develop active TB
 - A short treatment for LTBI to prevent who will development of active TB
- Screening test: easy, non invasive with high sensitivity to identify those with active or latent TB
- A better vaccine
- Knowledge of interventions for vulnerable populations
- Bio markers: for screening/diagnosis and following Tx to see whether it is working if it can be shortened

Vaccine effectiveness 2014-2015 for seasonal influenza vaccines in EU/EEA*



No heterogeneity $I^2 \geq 50.0\%$ or $p < 0.05$; based on crude country-specific VE.

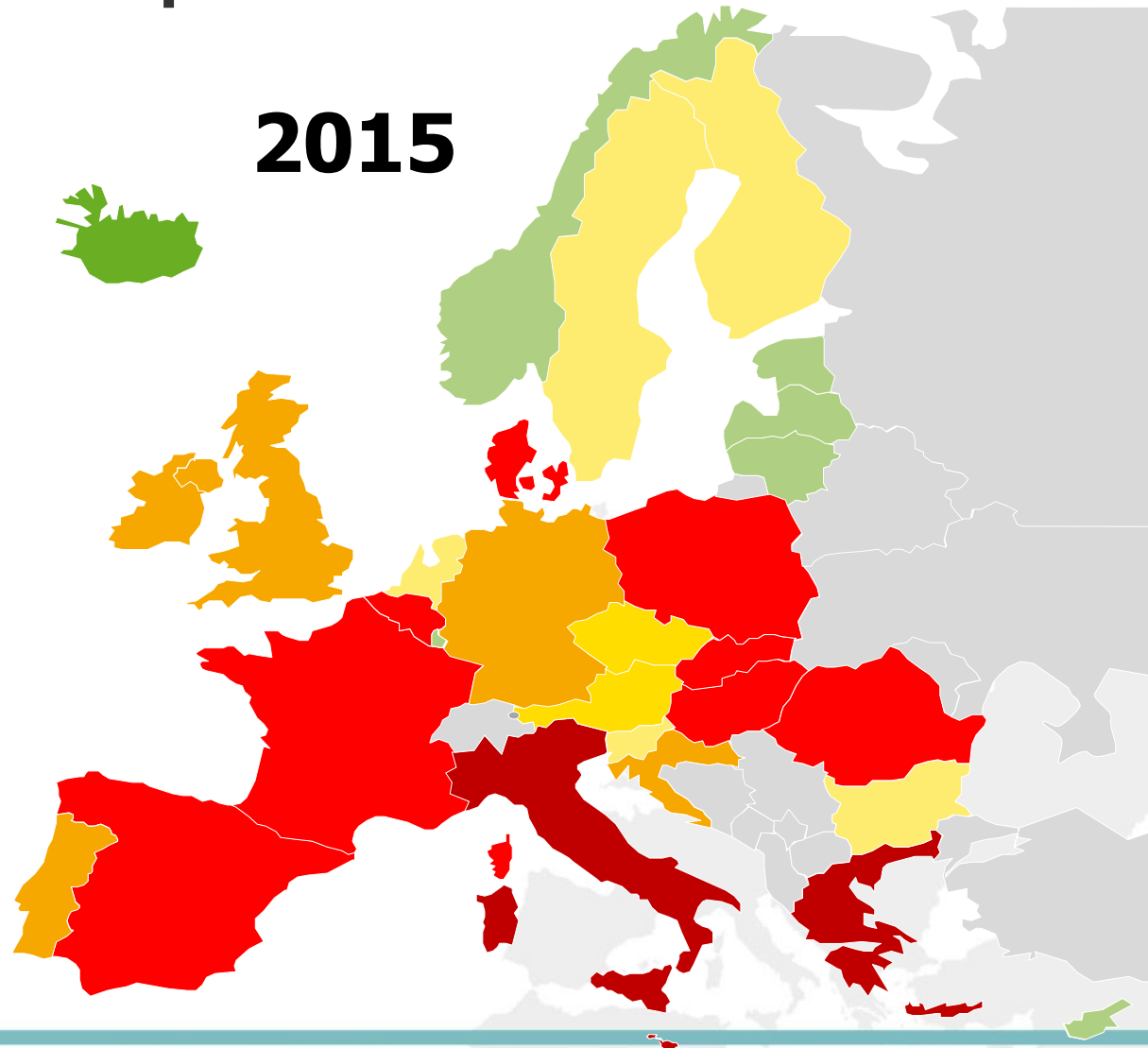
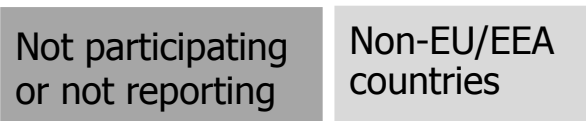
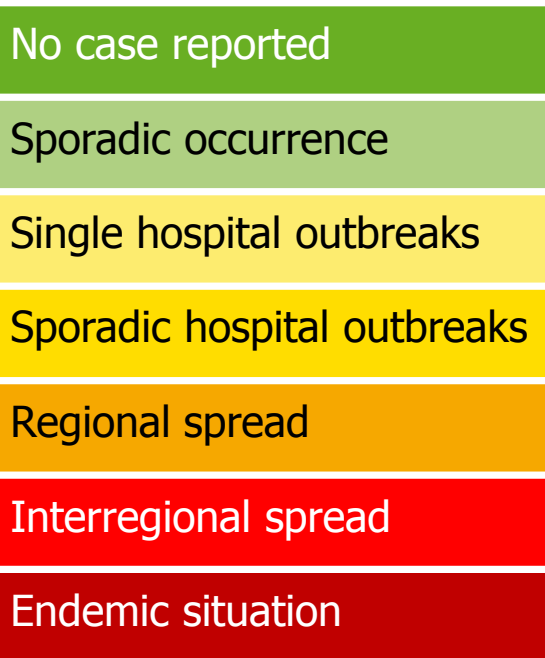
* 1-stage pooled estimate adjusted for age (RCS for A(H1N1) and B; age group for A(H3N2)), onset date (RCS), chronic condition, sex.

Influenza vaccines: Pandemrix and narcolepsy

Country	Age in years	Study design	Definition of onset	Follow-up period	Risk RR/OR	95% CI
Finland	4-19	Cohort	1 st contact to HC	1 Jan 2009 – 15 Aug 2010	12.7	6.1 – 30.8
France	<19	Case-control	Date for referral to MSLT	1 April 2009 – 30 April, 2011	5.1	2.11 – 2.3
	≥19				3.9	1.4 – 11.0
Ireland	5-19	Cohort	1 st contact to HC	1 Apr 2009 - 31 Dec 2010	13.0	4.6 – 34.7
Norway	4-19	Cohort	Date of EDS recorded by patient/family	1 Oct 2009 – 30 June 2010	14.5*	Not reported
Sweden	≤19	Cohort	Date of diagnosis G47.4	1 Oct 2009 – 31 Dec 2010	4.06	2.87 – 5.58
	21-30	Cohort		1 Oct 2009 – 31 Dec 2011	2.18	1.00-4.75
	31+	Cohort			1.58	0.68-3.44
United Kingdom	4-19	Case-Cohort SCCS	Date of EDS recorded by GP	6 months post-vaccination	16.2	3.1 – 84.5
					9.9	2.1 – 47.9

*Reported as at least 10-fold increase in final scientific publication

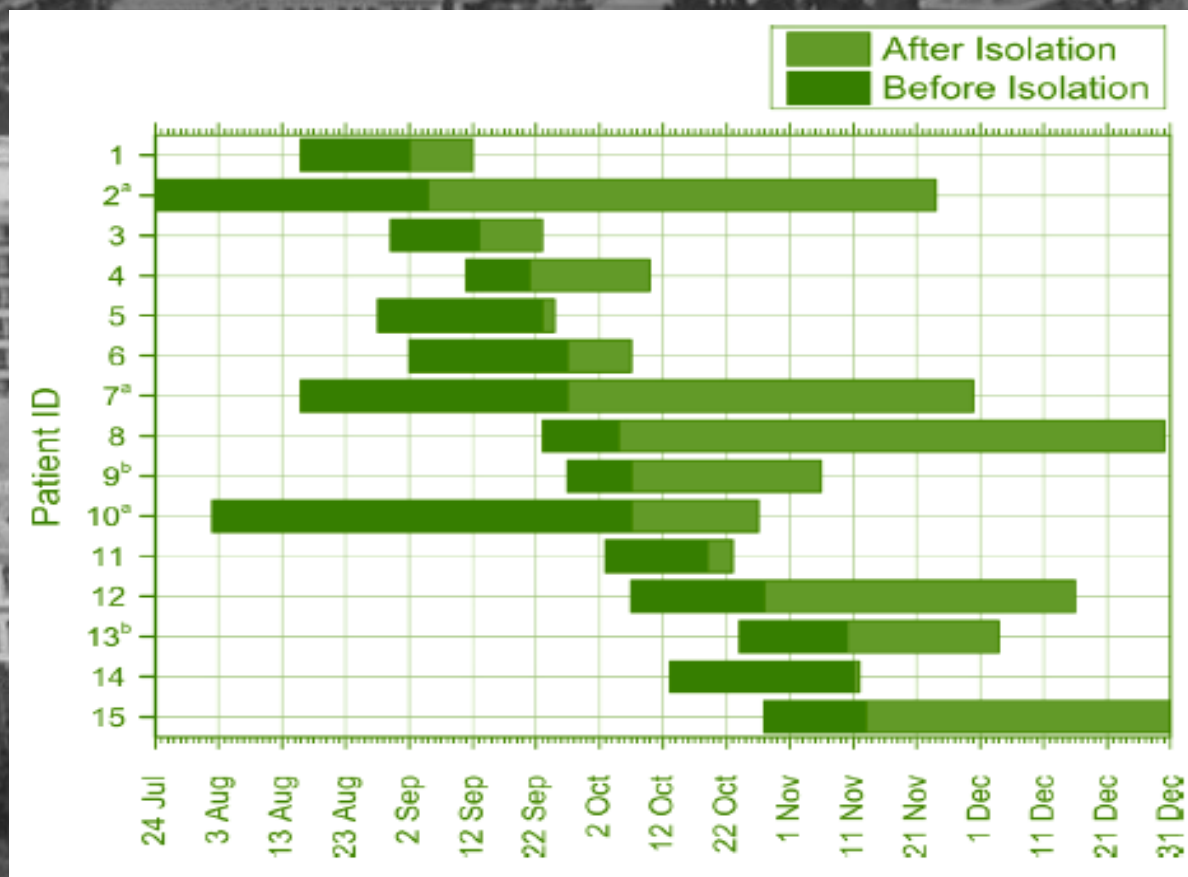
AMR: Spread of carbapenemase-producing *Enterobacteriaceae* (CPE) in the EU/EEA: assessment by national experts



AMR: Reporting of *mcr-1* gene (colistin resistance) in samples from animal, food, environmental and human origin (as of 13 June 2016)



AMR: Outbreak of pandrug-resistant VIM-1 *Providencia stuartii*, Sept.-Nov. 2011



ECDC – Improving and protecting public health in Europe



Thank you for your kind attention