Public Health England

Protecting and improving the nation's health

Laboratory confirmed cases of measles, rubella and mumps, England: October to December 2020

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Introduction

Measles, rubella and mumps are notifiable diseases and healthcare professionals are legally required to inform their local Health Protection Team (HPT) of all suspected cases. National enhanced surveillance including oral fluid (OF) testing of all suspected cases is provided through the Virus Reference Department (VRD) at Colindale to support and monitor progress towards WHO measles and rubella elimination targets.

The two key WHO indicators for measuring the performance of national measles and rubella surveillance systems are the rate of laboratory investigations (at least 80% of suspected cases) and the annual rate of discarded cases (at least 2 per 100,000 population). In order to achieve these targets our focus is on ensuring that all suspected cases are appropriately tested. IgM serology testing and oral fluid testing are the only two tests considered adequate by WHO for confirming and importantly discarding suspected measles and rubella cases. Recent infection is confirmed by measuring the presence of IgM antibodies or detecting viral RNA (by PCR) in these samples.

Samples that have been confirmed positive for measles or rubella are further sequenced and entered on the WHO global Measles Nucleotide Surveillance (MeaNS) or the Rubella Nucleotide Surveillance (RubeNS) system, respectively, which are hosted at the National Reference Laboratory. Genotyping and further characterisation of measles and rubella is used to support investigation of transmission pathways and sources of infection.

Data presented here are for the last quarter of 2020 (October to December). Analyses are done by date of onset of rash or symptoms and regional breakdown figures relate to Government Office Regions.

Historical annual and quarterly measles, rubella and mumps epidemiological data are available here from 2013 onwards:

Measles: confirmed cases (PHE)
Mumps: conformed cases (PHE)
Rubella: confirmed cases (PHE)

Results from all samples tested at Colindale are reported on the MOLIS/LIMS system and reported back to the patient's GP and local HPT. HPTs can also access the results of samples which have been processed by the VRD in the previous 100 days through the MRep site.

Table 1. Total suspected cases of measles, rubella and mumps reported to Health Protection Teams with breakdown of: a) proportion tested by Oral Fluid (OF); b) cases confirmed (all tests) nationally at the Virus Reference Department (VRD), Colindale; and at local NHS hospital and private laboratories; c) discard rate (all tests): weeks 40 to 53 of 2020

	Total suspected cases*	Number (%) tested by OF **Target: 80%**	**Number of confirmed infections**					** Discard rate based on negative tests per 100,000 population (all samples)
			Samples tested at VRD			**Samples tested locally**	**Total**	
			OF IgM positive samples	PCR positive samples	All other positive samples			
Measles	114	79 (69%)	0	0	0	0	0	0.14
Rubella	21	10 (47%)	0	0	0	0	0	0.02
Mumps	792	490 (62%)	3	0	2	0	5***	N/A

* This represents all cases reported to HPTs in England, that is, possible, probable, confirmed and discarded cases on HPZone.

** The rate of suspected measles or rubella cases investigated and discarded as non-measles or non-rubella cases using laboratory testing in a proficient laboratory. The annual discard rate target set by WHO is 2 cases per 100,000 population. We present quarterly rates here with an equivalent target of 0.5 per 100,000 population.

*** In the third quarter of 2020 some HPTs did not have the capacity to send out oral fluid kits to all suspected mumps cases.

Measles

There were no new laboratory confirmed measles cases in the UK in the final quarter of 2020 and the last laboratory confirmed case was reported in March [1] (Figure 1). That means that in 2020 there have been a total of 79 laboratory confirmed measles cases in the UK which is in stark contrast to the 798 cases reported in 2019. This sharp decline reflects the significant impact the COVID-19 pandemic and related public health control measures have had on the spread and detection of other infections including measles.

This downward trend in measles notifications has been observed across the world during the COVID-19 pandemic [2].

Rubella

There have been no laboratory confirmed cases of rubella reported in the UK in 2020.

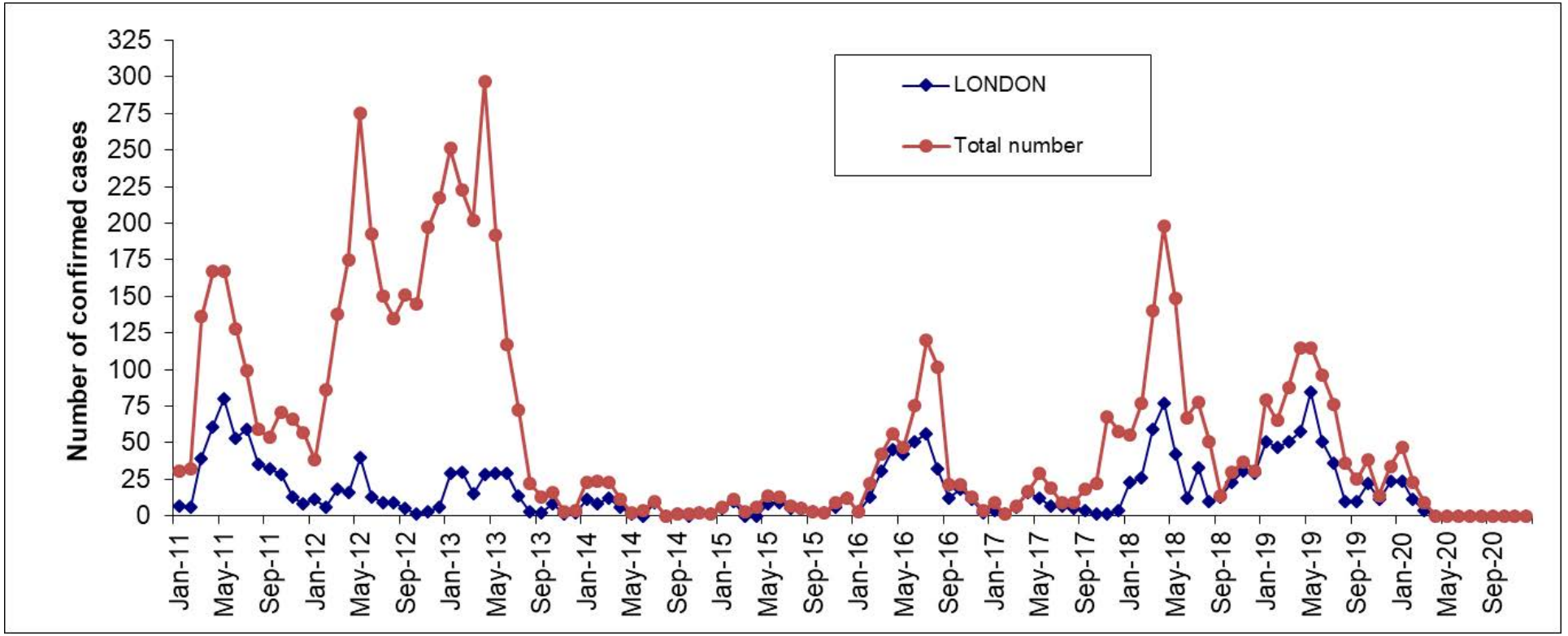
Mumps

In England, there were only 5 laboratory confirmed mumps infections between October and December 2020, bringing the total number of mumps cases in 2020 to 3216 [1,2]. (Figure 2). Only 60% of suspected mumps cases returned an Oral Fluid sample in the last quarter.

Measles, mumps and rubella Oral Fluid Testing

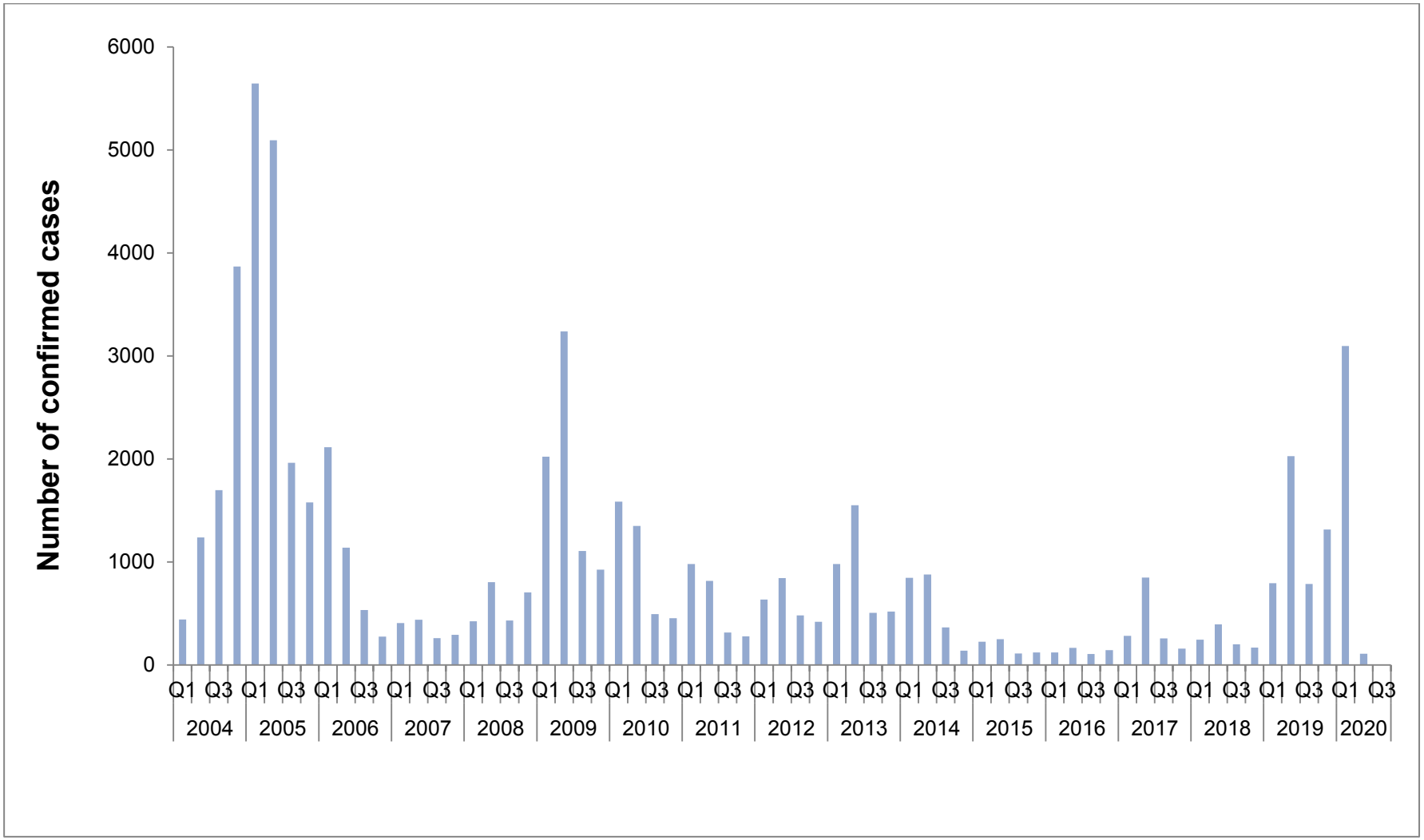
As previously described [1,3], PHE arrangements with Royal Mail have changed and measles, mumps and rubella OFKs are now being dispatched through a central service commissioned by the NIS Immunisation Division at PHE Colindale [3]. HPTs are asked to note the changes in the service and to familiarise themselves with the full details at Measles, mumps, rubella: oral fluid testing forms and instructions [4]. A new video on the Oral fluid test for measles, mumps and rubella kit explains how to take an oral fluid swab has also been published.

Figure 1. Laboratory confirmed cases of measles by month of onset of rash or symptoms reported, London and England: January 2011 to December 2020



All suspected cases of measles and rubella should be reported promptly to Health Protection Teams, a risk assessment conducted, and an Oral Fluid kit (OFK) sent for confirmatory testing even if local diagnostic testing is underway. This quarter an oral fluid sample was taken on 69% of all suspected measles cases, well below the 80% WHO target (Table 1).

Figure 2. Laboratory confirmed cases of mumps by quarter, England: 2003 to 2020



Impact of the COVID-19 pandemic on measles mumps and rubella surveillance and epidemiology

The routine surveillance and epidemiology of measles, mumps and rubella in the UK has been impacted in a number of ways during the COVID-19 pandemic.

The reduction in international travel will have reduced the number of measles and rubella importations, providing fewer opportunities for new chains of transmission.

Social distancing and lockdown measures are likely to have had a limited impact on measles transmission which is many times more infectious than SARS-CoV-2 [4]. However, there has been a significant impact on health-seeking behaviour, making it more likely that people with mild symptoms do not present to healthcare services. A fall in measles and mumps notifications (Notifications of Infectious Diseases, NOIDS) made to PHE was observed from week 12 and is more pronounced from week 13, the first week of COVID lockdown (see Figure 4 and Figure 5). This drop continued into the rest of this year.

The closure of universities and schools on 23 March 2020 will also have played a role in interrupting transmission, particularly of mumps outbreaks linked to these settings.

PHE is continuing to monitor the impact of the COVID-19 pandemic on the routine childhood immunisations. Interim analyses show that children scheduled for their first dose of MMR vaccine at 12 months of age around the time that social distancing measures were introduced in March 2020 had lower MMR vaccine coverage compared to the equivalent 2019 cohort [5]. Vaccine coverage data are still emerging, and further analyses will be published in due course.

PHE is working closely with partners on a recovery plan to catch-up any children who missed out on MMR and other vaccines in order to prevent outbreaks occurring as social distancing measures are gradually eased.

Figure 3. Measles notifications: England, 2020 (Source: NOIDS)

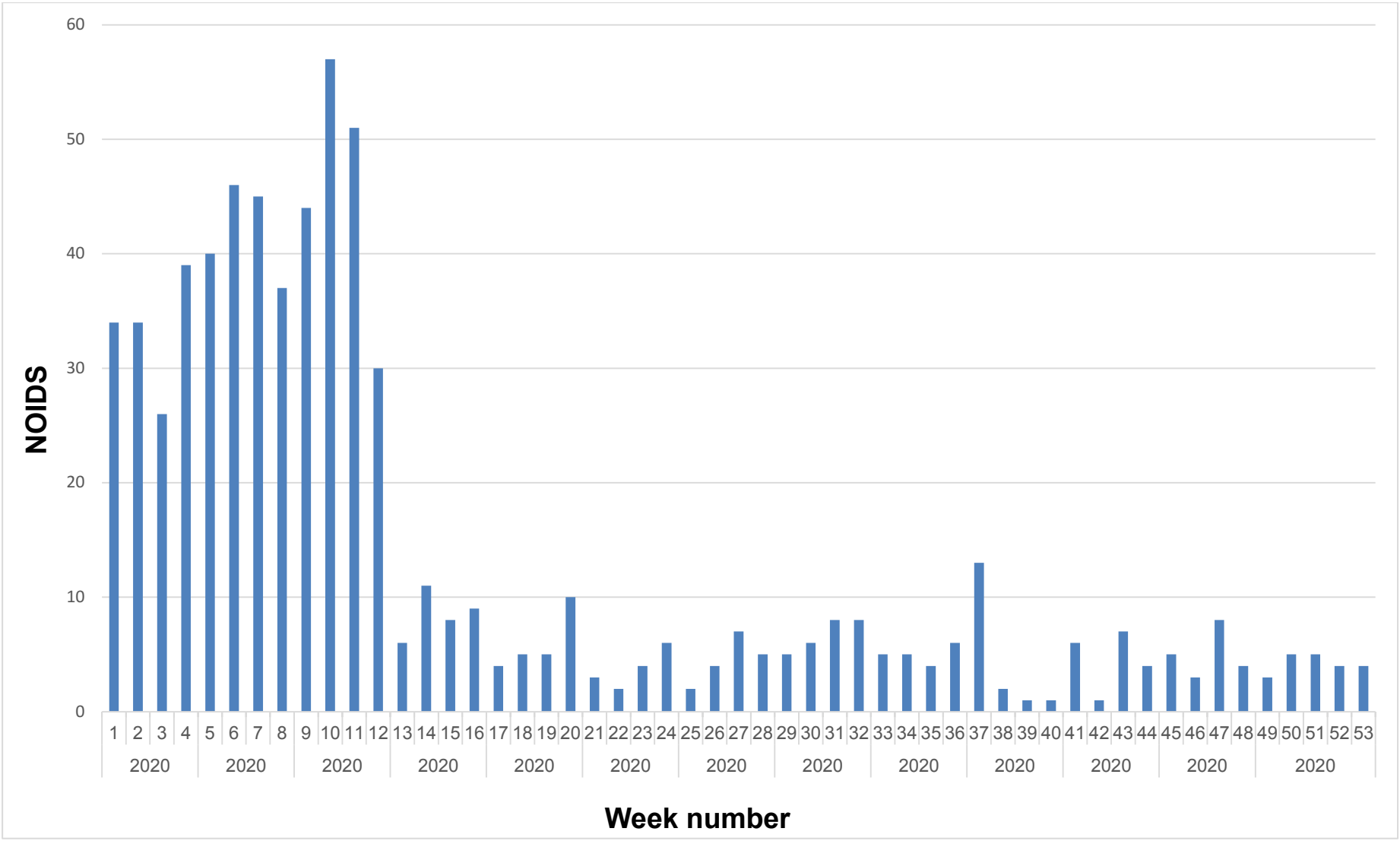


Figure 4. Mumps notifications: England, 2020 (Source: NOIDS)

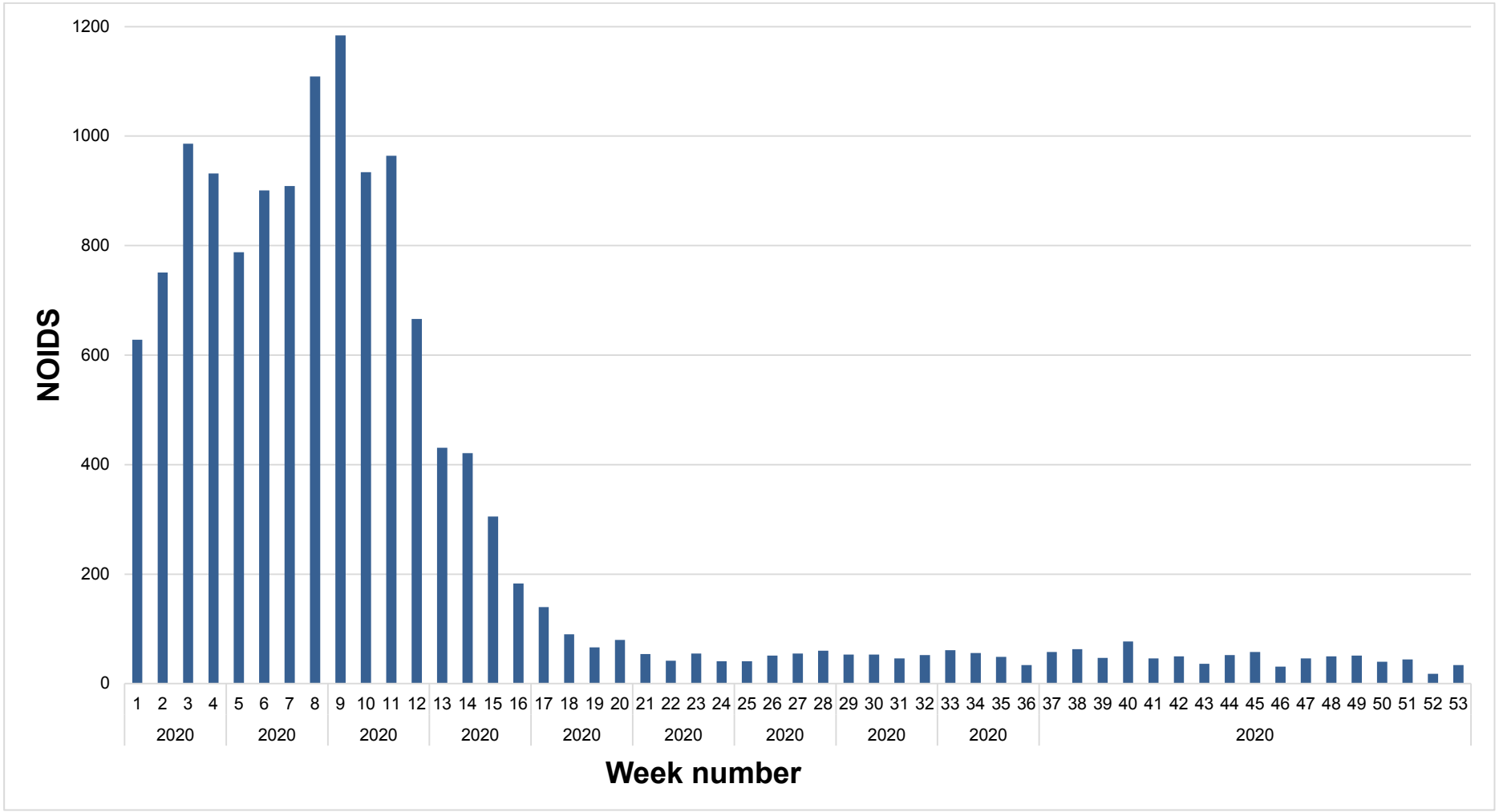
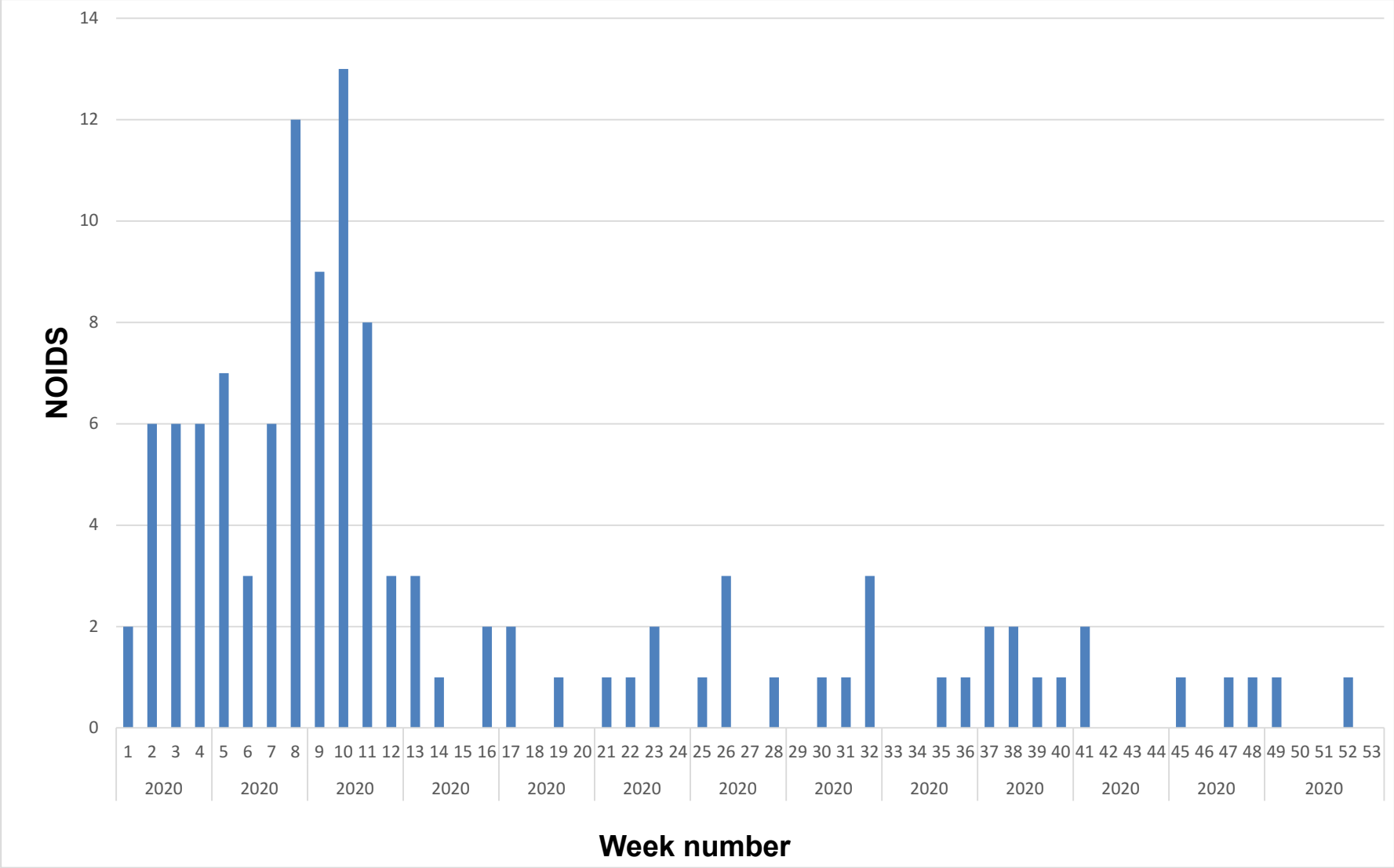


Figure 5. Rubella notifications: England, 2020 (Source: NOIDS)



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Health Protection Report is a national public health bulletin for England and Wales, published by Public Health England. It is PHE's principal channel for the dissemination of laboratory data relating to pathogens and infections or communicable diseases of public health significance and of reports on outbreaks, incidents and ongoing investigations.

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