

# Natural History of Oral Human Papillomavirus Infection in Healthy Populations: Design of the PRevalence of Oral HPV Infection, a Global AssESsment, the PROGRESS Study

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## BACKGROUND

- Little is known about incidence, persistence, and clearance of oral infection for human papillomavirus (OHPV) in the general population.<sup>1</sup> Incidence is 5.7-6.7 per 100 person-years among men and 6.8-39.6 per 100 person-years among women,<sup>2</sup> with men being at the greatest risk of OHPV persistence<sup>3</sup>
- OHPV prevalence variability in prior studies may be due to differences in study population characteristics and methods used to define Human Papillomavirus (HPV) infection

## OBJECTIVES

The PROGRESS study aims to assess:

- OHPV prevalence and associated risk factors among the general population in some European countries (France, Germany, Italy, UK, and Spain), China, and Japan (Figure 1)
- OHPV prevalence, incidence, persistence, clearance and associated risk factors among the general population in the US (Figure 2)

This poster describes the design of the PROGRESS study, which is ongoing. The implementation in China and Japan will be discussed separately.

## Outcomes Definitions

**OHPV infection:** Subjects with a positive test for HPV DNA in the oral rinse and gargle (ORG) sample.

**Prevalence:** Subjects with OHPV infection at the study/baseline visit, divided by subjects included.

**Incidence:** Subjects with newly diagnosed OHPV infection during the follow-up divided by subjects without OHPV infection at baseline (US only).

**Persistence:** Subjects with HPV type remaining positive for OHPV after a first positive test divided by subjects with OHPV infection at baseline (for prevalent cases) or first OHPV+ test (for incident cases) (US only).

**Clearance:** Subjects with negative OHPV test (all genotypes) after a positive test, divided by subjects with OHPV infection at baseline (for prevalent cases) or first OHPV+ test (for incident cases) (US only).

## METHODS AND RESULTS

### Study Design

- Cross-sectional single-cohort study in 6 countries, with a longitudinal follow-up in the US
- Conducted in public and private dental offices, aiming to be geographically representative by country
- Subjects to be recruited randomly as they attend a dentist's routine dental/oral examination
- HPV DNA analysis will be performed by a central laboratory

### Sample Size Estimations

- The sample size was calculated to estimate the prevalence of OHPV infection per gender by country
- For each prevalence estimation (all HPV types and high-risk (HR) types, including 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, and 59), different scenarios were considered for the estimated prevalence per gender, with the upper limit of the 95% CI as the worst-case scenario<sup>4,5,6</sup> (Table 1)
- In the US, the sample size was calculated to also estimate incidence, persistence, and clearance of OHPV infection, 15% lost to follow-up<sup>1,7</sup>

## References

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## Presenter Conflict of Interest

Edith Morais is an employee of MSD, Lyon, France.



<https://bit.ly/2K6PVIP>

Figure 1. Study Design in European Countries, China, and Japan

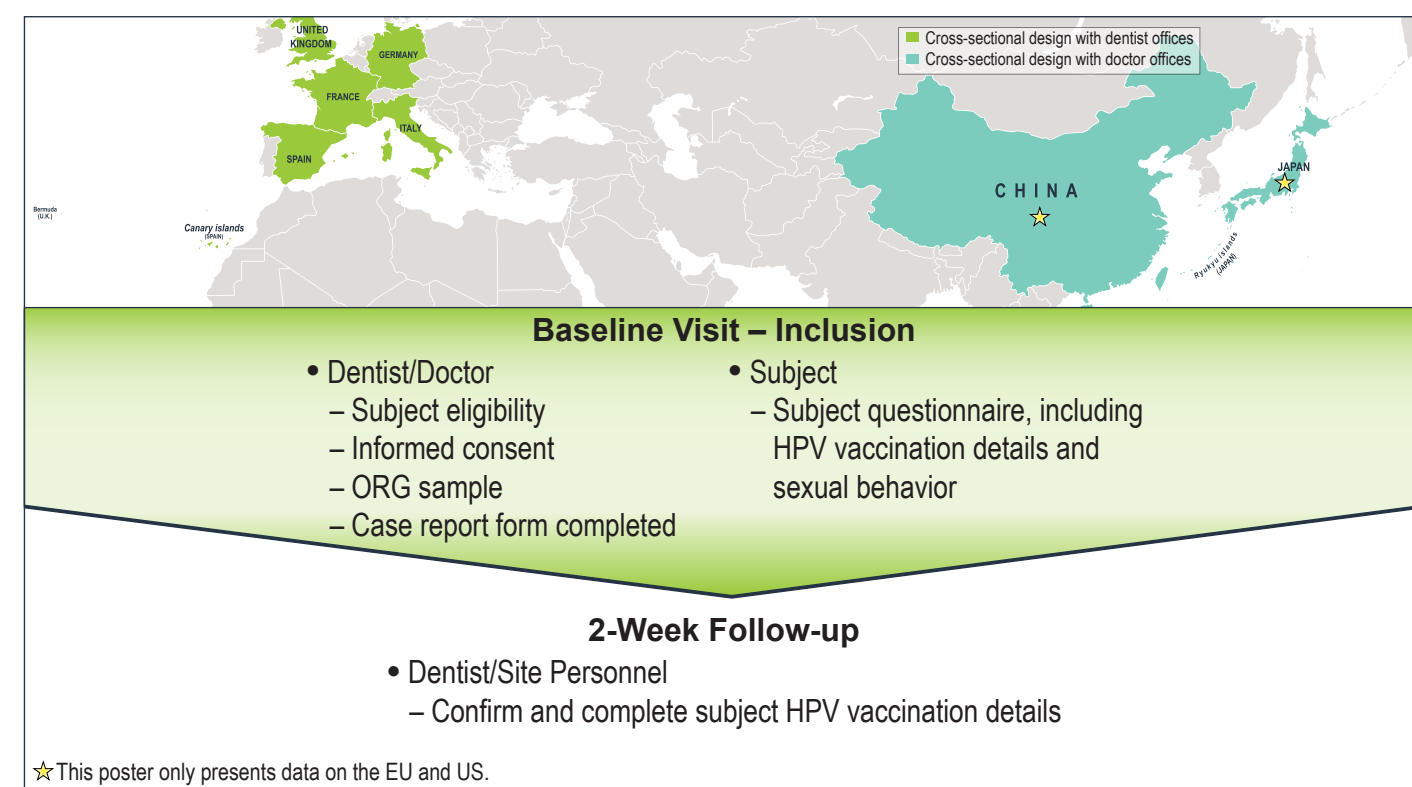


Figure 2. Study Design in the US

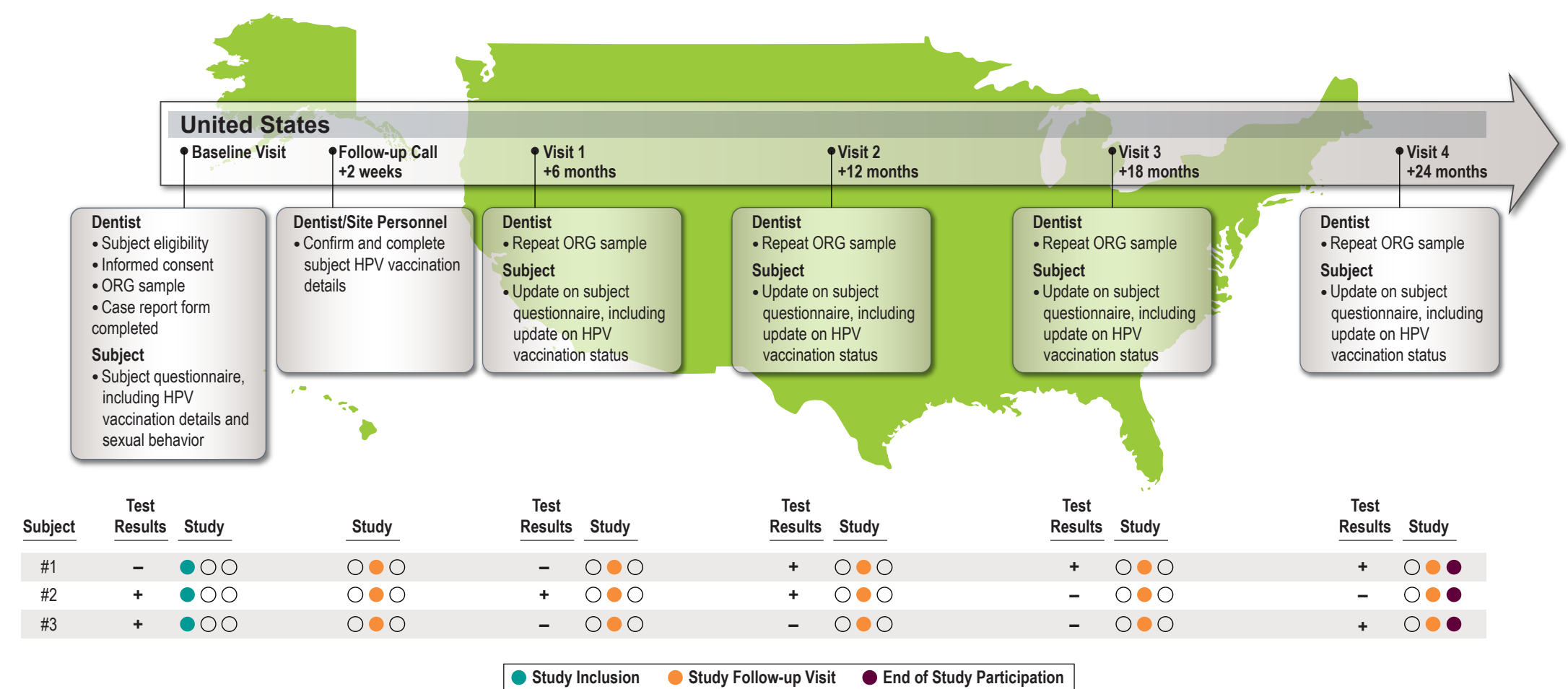


Figure 2 illustrates some of different cases that might occur during ORG sample collection.

Table 1. Sample Size per Country in European Countries and US

		European Countries				US									
		Prevalence		Prevalence		Prevalence		Incidence		Incidence					
		Males	Females	Males	Females	Males	Females <sup>a</sup>	Males	Females <sup>a</sup>	Males	Females <sup>a</sup>				
All HPV	Estimated outcome	6.5%	10.5%	6.5%	10.5%	11.5%	13.1%	3.2%	3.8%	4.4%	5.6%	2.2%	1.5%	2.8%	1.9%
	Sample size	508	563	508	563	1,270	<b>1,419</b>	1,545	1,477	2,343	2,385	2,695	2,644	2,505	2,335
	Precision	2.2%	2.6%	2.2%	2.6%	1.8%	1.8%	0.9%	1.0%	0.9%	1.0%	0.6%	0.5%	0.7%	0.6%
HR	Estimated outcome	3.6%	8.3%	3.6%	8.3%	7.3%	8.6%	1.4%	1.8%	1.7%	2.5%	0.9%	0.6%	1.3%	0.8%
	Sample size	548	<b>582</b>	548	<b>582</b>	1,396	1,412	<b>1,549</b>	1,458	2,094	2,244	2,376	2,838	2,228	2,320
	Precision	1.6%	2.3%	1.6%	2.3%	1.4%	1.5%	0.6%	0.7%	0.6%	0.7%	0.4%	0.3%	0.5%	0.4%

In bold, the higher sample size required, by gender and at country level, to assess HPV infection prevalence/incidence for HR and all HPV types. HR types include 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, and 59.

<sup>a</sup>Due to scarce data on OHPV persistence among females in the US, it was considered of a higher incidence rate based on a conservative approach (1/2 and 1/3 of the male incidence).

- A total of 8,788 subjects (4,329 males, 4,459 females) will be recruited (Table 2)
- Subjects will be stratified by gender and age (18-30, 31-40, 41-50, and 51-60 years)

Table 2. Expected Subjects, Males and Females, per Country

Expected Subjects	France	Germany	Italy	Spain	UK	US	TOTAL
Males	582	582	582	582	582	1,419	4,329
Females	582	582	582	582	582	1,549	4,459
<b>Total</b>	<b>1,164</b>	<b>1,164</b>	<b>1,164</b>	<b>1,164</b>	<b>1,164</b>	<b>2,968</b>	<b>8,788</b>

## CONCLUSION

- Data arising from this study should inform the natural history of OHPV among the general population, who attend dental offices across multiple geographic world regions utilizing a common standard protocol
- The feasibility questionnaire used to identify participant sites will allow recruitment of suitable sites for conducting the study
- Additional countries might be included in the future