



HP Study Initiation Package, including study protocol

Deliverable no. D2.1

11.2023 (Revised 03.2025)

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Project information

Project title	Cancer Prevention at Work: Occupational health surveillance in the implementation of prevention of infection-related cancer.
Acronym	CPW
Project URL	www.cancerpreventionatwork.eu
EC Grant Agreement n.	101104716
Call	HORIZON-MISS-2022-CANCER-01 submitted for HORIZON-MISS-2022-CANCER-01
Call Topic	HORIZON-MISS-2022-CANCER-01-01 - Improving and upscaling primary prevention of cancer through implementation research
Type of Action	HORIZON-RIA
Project start/end date	01.05.2023 > 30.04.2027
Project duration	48 months
EU Project officer	
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Deliverable information

Deliverable n.	D2.1
Work package n.	WP2
Task n.	2.2
Deliverable title	HP Study Initiation Package, including study Protocol
Lead beneficiary	FINBA
Participants	UNIBO, SCMUT
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Due date	31.11.2023
Document status	Final
Document version	V4
Document type*	R
Dissemination level	Public

*Legend = **R** – Report // **DEM** – Demonstrator, pilot, prototype, plan designs // **DEC** – Websites, patents filing, press & media actions, videos, etc. // **DMP** – Data management plan // **OTHER** – Software, technical diagram, algorithms, models, etc.

	Name of the Entity	Acronym	Role	Country	ORG Type
1	Alma Mater Studiorum – University of Bologna	UNIBO	C	IT	RTD
2	National Institute of Public Health	INSP	B	RO	PHI
3	Romanian Society for Occupational Medicine	SRMM	B	RO	SME
4	Clinic Hospital Colentina, Bucharest	Col Hosp	B	RO	Hosp
5	Timisoara Municipal Emergency Clinical Hospital	SCMUT	B	RO	Hosp
6	Regional Authority of Public Health Banská Bystrica	RAPH BB	B	SK	PHI
7	University of Southern Denmark	SDU	B	DK	RTD
8	WEDO Project Intelligence Made Easy SI	WeDo	B	ES	SME
9	F.D. Roosevelt University General Hospital of Banská Bystrica	FDRH	B	SK	Hosp
10	Fundacion para la investigacion y la innovacion biosanitaria del Principado de Asturias	FINBA	B	ES	NGO
11	Intesa Sanpaolo SPA	ISP	B	IT	LC
12	Università di Torino	UNITO	B	IT	RTD
14	Heidelberg University Hospital	UKHD	B	DE	RTD
15	RPA Europe Prague s.r.o.	RPA Prague	B	CZ	SME
16	Regione Emilia Romagna	RER	B	IT	PHI
17	Zeleziarne Podbrezova a.s.	ZP	B	SK	SME
18	ASL Città di Torino	ASL TO	B	IT	PHI
19	Health Service of the Principality of Asturias	SESPA	AP	ES	PHI

***Legend** = Role in the Project: **C** – Coordinator // **B** – Beneficiary // **AP** – Associated Partner // Organization Type: **RTD** – Research and Technological Development// **PHI** – Public Health Institution // **Hosp** – Hospital // **SME** – Small and medium-sized enterprises. // **LC** – Large Company // **NGO** – Non-Governmental Org.

Tab. 1 The CPW's Consortium

	Work Packages Name	WP Leader
1	WP1 Coordination and Management	UNIBO
2	WP2 Gastric Cancer Prevention Through H P Screening and Treatment	FINBA
3	WP3 Liver Cancer Prevention Through HCV Screening and Treatment	INSP
4	WP4 Prevention of Cancers Associated with HPV Infection	RAPH BB
5	WP5 Behavioural and Sociocultural Assessment	SDU
6	WP6 Cost Effectiveness Analysis	RPA Prague
7	WP7 Dissemination, Outreach and Exploitation	WEDO

Tab. 2 The CPW Work Packages and CPW2 Working Group Composition

WP2 Working Group Composition					
	Entity	Acronym	Country	Name	Email
1	Alma Mater Studiorum – University of Bologna	UNIBO	I		
2	Timisoara Municipal Emergency Clinical Hospital	SCMUT	R		
3	WEDO Project Intelligence Made Easy	WeDo	B		
4	Fundacion para la investigacion y la innovacion biosanitaria del Principado de Asturias	FINBA	E		
5	FLAT srl	F.L.A.T.	I		
6	Heidelberg University Hospital	UKHD	D		
7	RPA Europe Prague	RPA Prague	C		
8	Regione Emilia Romagna	RER	I		

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Tardon A., Gan R. K., HP Study Initiation Package, including study protocol (CPW D2.1)

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Updates following the 1st project technical review

After the first project technical review, we made several updates to improve clarity and address feedback:

- **Section 6.4** now includes a justification for the sample size.
- **Section 6.12** has been expanded to clarify study outcomes, follow-up processes, and their implications. It also includes a discussion on treatment compliance and how failed eradication is managed for participants in public health systems.
- **Section 6.16** has been revised to use a less assertive tone.

1 Executive summary

In the context of global health, chronic infections such as *Helicobacter Pylori* (HP) significantly contribute to the gastric cancer burden. Addressing this, WP2 strategically focuses on integrating HP screening and eradication within occupational health surveillance programs. This integration serves as a primary preventive approach against gastric cancer, targeting both workers and their household members. The initiative is designed to evaluate the effectiveness and cost-efficiency of HP prevention in occupational health settings, while also investigating the prevalence and determinants of HP infection across various worker cohorts. A key aspect of WP2 is the promotion of awareness about HP-related diseases and the importance of prevention strategies. Furthermore, the project aims to develop and coordinate comprehensive plans for large-scale implementation of HP prevention, drawing insights from the results of pilot projects.

The methodology of WP2 encompasses a range of tasks, including the design of screening and eradication protocols, coordination of pilot projects, and extensive data collection and analysis. This is coupled with developing strategies for broad implementation within the occupational health surveillance framework. Diagnostic and treatment strategies primarily involve serology and stool antigen tests to identify HP infections. Positive cases are referred for treatment, and family members are also considered for referral and management by the healthcare system of every country. Data management is a critical component, involving the collection, harmonization, and analysis of data to evaluate the intervention's determinants and effectiveness, including monitoring treatment compliance and success in eradication.

The expected impact of WP2 is multifaceted. Occupational health-based screenings are projected to enhance participation rates, particularly among workers with unconventional working hours. The 'screen and treat' strategy has the potential to be a cost-effective approach that may help, reduce the prevalence of HP and consequently, the associated gastric complications and cancer risks. This intervention aligns with the 'Total Worker Health' concept, utilizing occupational health visits as opportunities for broader health promotion and disease prevention. In conclusion, WP2 is a comprehensive effort targeting a significant public health concern by embedding HP screening and eradication into the existing occupational health surveillance frameworks. This innovative approach aims at gastric cancer prevention and enhancing overall worker health and well-being. The model established by WP2 has the potential to be replicated in diverse settings and populations, potentially setting a precedent for similar health initiatives within occupational health programs. The success of WP2 could thus open pathways for addressing other health issues through occupational health surveillance.

The intended audience of this deliverable consists of members of the CPW consortium and the European Commission.

2 LIST OF ACRONYMS AND ABBREVIATIONS

Abbreviation	Description
CPW	Cancer Prevention at Work
GC	Gastric Cancer
HP	Helicobacter Pylori
HCV	Hepatitis C Virus
HPV	Human Papiloma Virus
IgG	Immunoglobulin G
SAT	Stool Antigen(HP) Test
UBT	Urea Breath Test
TBD	To be decided
WP	Work Package

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Table 2: Sample size justification for HP Initiation package

Table 3: Variables will be collected during the study

Table 4: Modalities of laboratory tests in different countries

Table 5: Description of the implementation centers for HP

Table 6: Prevention and health promotion initiatives in the implementation centers

Table 7: Link with treatment and eradication

5 Introduction

Chronic infections represent a major cause of human cancer: on a global scale, they are responsible for an estimated 13% of human cancers. *Helicobacter Pylori* (HP), Hepatitis C virus (HCV), and Human Papilloma Virus (HPV) are responsible together for 75% of these cases, or 10% of the total cancer burden¹. Occupational health surveillance is mandatory in all European countries: although the mechanisms of its implementation vary between the countries, these programs generally aim at diagnosing and preventing work-related diseases. Prevention of occupational cancers has, therefore, been a component of OH surveillance. In recent years, however, there has been a movement towards including in occupational health surveillance aspects of health promotion (workplace health promotion), which are not occupational in a strict sense. This approach stems from several considerations: (i) the contact between the worker and the health professional in charge of the surveillance can be seen as a privileged opportunity for health promotion in general; (ii) through the worker, the health promotion initiative may reach other groups of the population; (iii) because of the periodic nature of the visits entailed by the occupational health surveillance, it is possible to efficiently implement follow-up mechanisms. The conceptual framework of the proposed research is based on the incorporation into ongoing occupational surveillance schemes of primary prevention programs against infection with HP, HCV, and HPV. The overarching objectives of the proposed research are: - to conduct a series of pilot projects aimed at assessing the effectiveness (including cost-effectiveness) of incorporating primary prevention interventions against HP, HCV, and HPV into existing occupational surveillance systems in high-risk populations, including its impact beyond the workers directly involved in the pilot projects; - to identify barriers and bottlenecks for the implementation of such interventions. This action is part of the Cancer Mission cluster of 'Prevention and early detection' projects.

5.1 Objectives of WP2 task

The overarching objective of WP2 is the implementation of HP screening and eradication as primary prevention of stomach cancer, within occupational health surveillance programs.

HP infection is the main etiological factor of gastric adenocarcinoma in all locations, both for the intestinal and diffuse types. At least 80% of stomach cancers are related to HP infection, and its eradication reduces the risk of developing the disease. A screening and eradication strategy is recommended in asymptomatic individuals positive for HP infection. HP infection is spread through contaminated food and water and by direct word-of-mouth contact, and most infections are acquired in childhood in the household.

The Specific Objectives of WP2 include:

02.1 To design the protocol for screening and eradication of HP among workers involved in occupational health surveillance, including follow-up, referral to the Clinical Health System and screening of family members of HP-positive workers;

02.2 To coordinate the implementation of the pilot project on HP prevention in several centers participating in CPW;

02.3 To analyze the data collected within the pilot projects on HP prevention on determinants of HP infection and effectiveness of the intervention;

02.4 Based on the results of the pilot projects, to develop plans for large-scale implementation of HP prevention within occupational health surveillance systems and clinical and public health systems.

02.5 To collaborate with public health administration and community stakeholders to identify the best strategies to increase the adherence of the population to the program of screening and eradication of HP at the community level in Europe.

Description of Task

The overarching objective of this WP is to design and implement a primary prevention program for gastric cancer through a screening program of HP aimed at workers and their household members in

¹ De Martel C, Georges D, Bray F, Ferlay J, Clifford GM. Global burden of cancer attributable to infections in 2018: a worldwide incidence analysis. *Lancet Glob Health*. 2020;8: e180-e190.

European populations, its treatment and its family and community eradication; to disseminate the knowledge through innovative strategies targeted to citizens the knowledge about the evidence-based association between the infection with HP and cancer, and its prevention through screening and eradication.

Task 2.1. Identification and evaluation of current national/regional programs for the prevention of HP and gastric cancer. This task will focus on the identification and description of existing evidence-based programs for the prevention of HP infection and how these are integrated into gastric cancer prevention in participating countries and regions. The acceptance, affordability, gaps, barriers, and facilitators will be evaluated.

Task 2.2. Design of a protocol for a pilot study on screening and eradication for HP of workers involved as subjects in occupational health surveillance, including screening of household members of HP-positive workers. The WP coordinator and the PIs of the centers in which the HP pilot study will be performed will form a Protocol Group which will define the methodological details of the intervention, including deviations that may be justified by local conditions.

Task 2.3. Implementation and coordination of the pilot project on HP prevention in selected centers participating in CPW. The intervention on screening and eradication of HP infection will be implemented on different populations of workers subjects of the occupational health surveillance, and provide referral to the household members of infected workers, according to the protocol defined in Task 2.2. This will include follow-up and referral to the Clinical Health System of positive subjects for evaluation. The intervention will include a component on training of occupational and primary care physicians.

Task 2.4. Management and analysis of data collected within the pilot projects on HP prevention on determinants of HP infection and effectiveness of intervention. Data on the conduct and outcome of the pilot projects will be collected according to standard forms and transferred in de-identified format to the Data Coordination Center, where will be harmonized. Copies of the pseudo-anonymized harmonized data will be provided to the WP coordinator and other Consortium members participating in the WP for statistical analysis of determinants of HP infection, adherence to screening and treatment, and outcome of the intervention in workers.

Task 2.5. Development of plans for large-scale implementation of HP screening and eradication within occupational health surveillance systems. A working group will be established, comprising representatives of public health authorities and other stakeholders, to develop, based on the results of the pilot projects, plans for the implementation of programs based on occupational health surveillance for the screening and eradication of HP infection. Plans will be designed according to the methodology of implementation sciences.

Task 2.6. Identification of the best strategies to increase the adherence of European populations to the program of screening and eradication of HP. A workshop will be organized involving all members of the WP as well as external stakeholders, including the European Commission, to identify strategies for increasing adherence and participation of populations of workers across the European Union in programs of screening and eradication of HP infection as a tool for the prevention of gastric cancer.

6 Contents of the deliverable D 2.1

Deliverable 2.1 is a public report and contains the protocol developed by the WP2 working group for the prevention of gastric cancer by pilot intervention to prevent HP through screening and eradication. The protocol is designed in accordance with the specifications of task 2.2

6.1 Background and Study Rationale

Chronic infections represent a major cause of human cancer: on a global scale, they are responsible for an estimated 13% of human cancers. HP is one of the main responsible for cancer burden. In fact, IARC classified HP as group 1 carcinogens, given its causal association with non-cardia gastric cancer. In addition, HP is specifically related to mucosal-associated lymphoid tissue (MALT) lymphoma of the stomach. Also, HP causes one of the most common diseases worldwide, namely gastritis, and the currently decreasing disease of peptic ulcer. Extra-gastric diseases such as syderopenic anemia and thrombocytopenic purpura have been reported to be more likely in HP positive subjects.

Worker health surveillance can be combined with other health interventions. This approach has been best described by the US National Institute of Occupational Safety and Health as 'Total Worker Health', defined as policies, programs, and practices that integrate protection from work-related safety and health hazards with prevention efforts to advance worker health and well-being in general. This approach stems from several considerations: (i) the contact between the worker and the health professional in charge of the surveillance, most often an occupational physician, can be seen as a privileged opportunity for health promotion in general; (ii) through the worker, the health promotion initiative may reach other groups of the population, in particular, the worker's household members; (iii) because of the periodic nature of the visits entailed by the occupational health surveillance, it is possible to efficiently implement follow-up mechanisms, e.g., to assess the effectiveness of primary intervention programs.

The development of prevention initiatives based on the Total Worker Health concept has mainly focused on behavioral interventions toward major determinants of health, such as tobacco smoking and healthy diet. The conceptual framework of the proposed research is based on the incorporation into on-going occupational surveillance schemes of primary prevention programs of gastric cancer caused by infection with HP.

The prevalence of HP infection determines the burden of GC attributable to this pathogen. HP prevalence is dynamic, as well as the geographical distribution of HP strains, which can be more or less virulent and antimicrobial resistant. Thus, updated and repeated estimates of HP prevalence in a population are needed to monitor a country's HP infection status and the related disease burden. Many Asian studies demonstrated the cost-effectiveness of a test-and-treat intervention in high-risk populations^{2,3}. Among the tests that have been used, there are blood antibodies, UBT, and SAT. Currently, HP is not systematically investigated in the population, nor is its testing is proposed for the general population or at the occupational setting level.

6.2 Expected impact

The expected impact of HP prevention in the workplace is marked by several public health outcomes. Occupational-based health screenings, tailored to diverse working schedules, have enabled higher participation rates, particularly among those with unconventional hours, such as shift worker. This has

² Cheng HC, Wang JD, Chen WY, Chen CW, Chang SC, Sheu BS. *Helicobacter pylori* test-and-treat program can be cost-effective to prevent gastric cancer in Taiwanese adults: referred to the nationwide reimbursement database. *Helicobacter*. 2015 Apr;20(2):114-24

³ You JH, Wong PL, Wu JC. Cost-effectiveness of *Helicobacter pylori* "test and treat" for patients with typical reflux symptoms in a population with a high prevalence of *H. pylori* infection: a Markov model analysis. *Scand J Gastroenterol*. 2006 Jan;41(1):21-9

facilitated timely diagnoses and interventions for HP, leading to a notable decrease in its prevalence among workers. As a consequence, there's a direct improvement in health outcomes and a reduction in absenteeism, enhancing overall productivity. The eradication of HP offers relief from gastric complications like dyspepsia and curtails long-term complications such as gastric cancer, ensuring an overall healthier workforce. From an economic perspective, the 'screen and treat' approach for HP has proven cost-effective. While there are initial expenses tied to detection and treatment, the long-term financial benefits, derived from avoiding advanced treatment costs and maintaining consistent workforce productivity outweigh these costs, making it a beneficial strategy for both employees and employers.

6.3 Study aim and design

CPW-HP (WP2): Cancer prevention at work – Screening and eradication of HP infection within the framework of occupational health surveillance.

Primary aim:

- To investigate the feasibility, performance, and cost-effectiveness of prevention interventions targeted toward HP-related GC within the framework of occupational health surveillance programs.

Secondary aim(s):

- To investigate the prevalence and determinants of HP infection in different cohorts of workers and in their household members.
- To promote knowledge on HP-related diseases, including cancer, and the possibility of their prevention through the channel of occupational medicine.

The intervention will be implemented as a pilot study for HP screening and eradication in various occupational groups and workplace settings and will target a minimum of 1000 workers in each participating country and center, as shown in Table 1. During the routine occupational health surveillance or medical examination at work, workers will be invited to participate in the pilot study by taking informed consent, responding to baseline questionnaires, and taking HP screening tests (HP serology or SAT, depending on the center), as shown in the schematic representation.

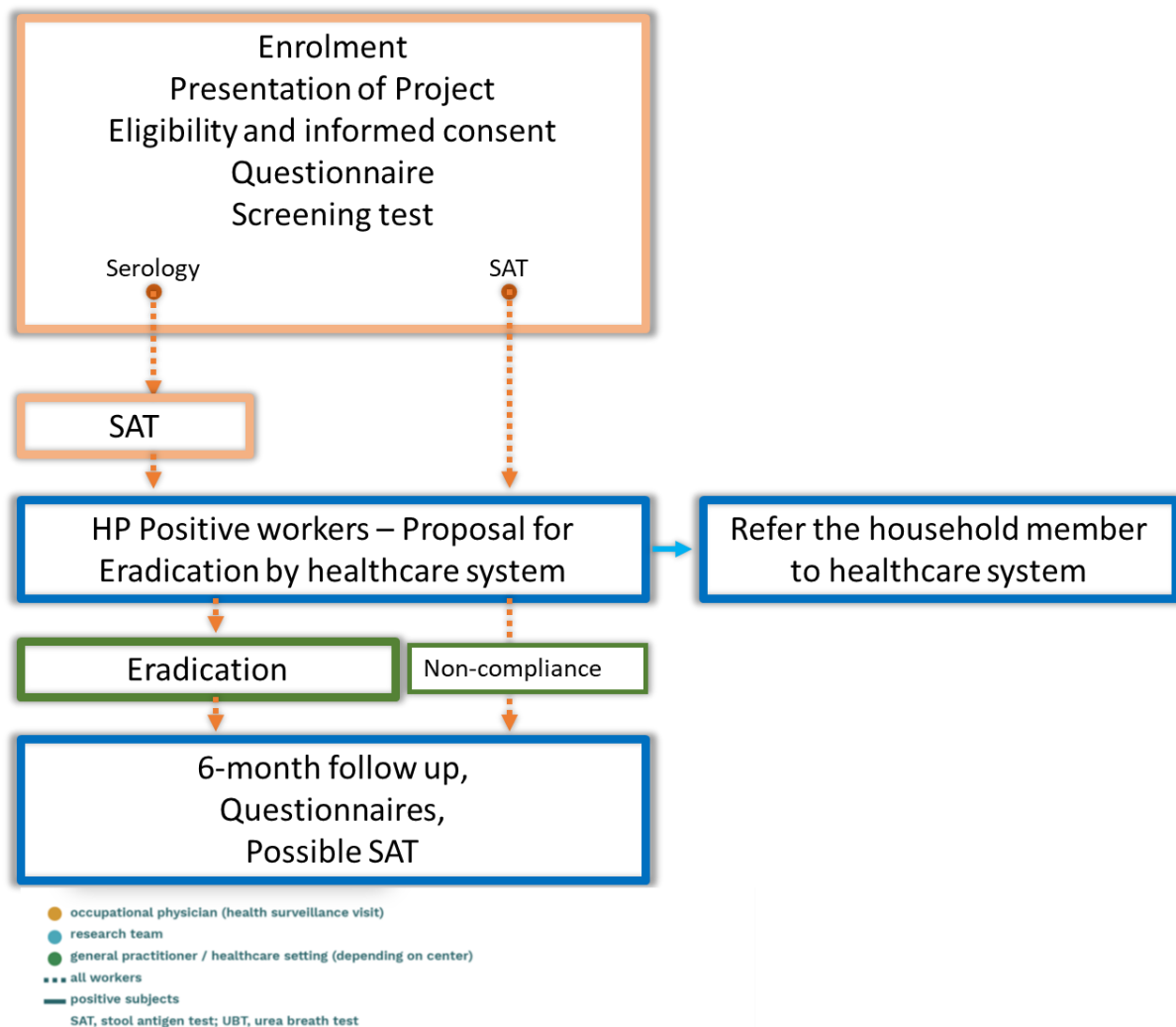
The **diagnostic criteria** for HP infection will be a positive SAT.

The **eradication criteria** for HP infection will be negative SAT or UBT after completion of HP treatment.

Following the positive diagnosis of HP infection, the worker will be proposed for treatment by referring to the healthcare system of each respective country. A referral letter will be provided to the worker's household members to visit their GP or healthcare system for further management.

Workers diagnosed with HP will be contacted by the occupational health surveillance system after 6 months directly, by email, or telephone and will be asked follow-up questions regarding their general health status, the diagnostic and therapeutic actions undertaken, compliance, and a possible invitation for SAT to ensure eradication (in the subset of workers taking into account of compliance to the treatment in some centers- to look for factors that influence compliance to treatment).

Figure 1: Schematic representation for the intervention design:



6.4 Study implementation and centers description

The study, structured as a pilot intervention across various countries and occupational settings, aims to engage diverse occupational groups with differing risk levels. Table 1 provides an overview of these implementation centers. Notably, numerous employers independently conduct local prevention and health promotion programs, regardless of the biological risk profile of their workplaces. Such initiatives, both past and present, potentially influence workers' attitudes and behaviors toward adopting healthier lifestyles. Furthermore, the context of occupational health surveillance—including its organization, staff, and laboratory facilities—varies between and within countries. Considering these multifaceted aspects of the implementation centers, it is crucial that the study protocol acknowledges the local context and incorporates a degree of flexibility in its execution. **Table 5** provides a comprehensive description of the implementation centers for HP, while **Table 6** outlines the prevention and health promotion initiatives carried out at these centers.

The baseline questionnaire will be translated/adapted to the local language, and tested/validated locally. During the same OH visit, the biological samples will be collected following the study center's own standard procedure in place. The laboratory results of the test will be communicated to the study subject as soon as available, by the occupational health staff, who will explain the results and discuss further option for the next step.

Table 1: Target population (Workers)

Study partner(s)	Country	Workers Population	Sample Size

Sample size justification

A total of 1,000 workers will be included in each center. This sample size will be sufficient to provide evidence of effectiveness of the intervention with a standard error of 2%, assuming 25% workers with infection, 80% participation rate, 70% adherence to the eradication, and 80% efficacy of the eradication. The p-value of the comparison with a control population with 0.1 spontaneous clearance or treatment (controls) is < 0.001 . These estimates will be compared with actual proportions of participation, adherence, efficacy and infection prevalence measured during the project's progress.

6.5 Study population and eligibility criteria

Prospective recruitment of all subjects will take place according to the following strategy:

Inclusion criteria

1. Age 25 – 65 years old.
2. Informed consent provided.
3. Workers attending occupational health surveillance.

Exclusion criteria

1. Not able to undergo HP therapy and eradication (e.g. pregnant or breastfeeding, active cancer...)
2. No means of obtaining adequate samples (blood or stool) as per protocol requirements.
3. Subjects who are diagnosed with HP, and ongoing, or partially, or completed treatment.

Temporary exclusion criteria for SAT

1. Diarrhea.
2. Currently on antibiotics/Proton pumps inhibitors/H2 blockers/antacids (need to stop 4 weeks prior to SAT sample collection, exclude if no means of stopping the medication)

Household members

All household members of workers who tested positive for HP will be provided a referral letter to their GP or other healthcare system representatives for further management.

6.6 Proposed questionnaires at the start and end of the CPW screening procedure

Questionnaires will be collected by the OH team during the enrolment and after signing the informed consent. The final questionnaire will be collected during the 6 month follow-up. Questionnaire are attached to annex 1. **Table 3** shows the variables that will be collected during the study.

Table 3: Variables will be collected during the study

Questionnaire variables	
Socio-demographic domain variables.	Variables include age and sex, blood group, height and weight, marital status, residency, whether the person live together with someone or alone, and the education level. It is also collected the information on where the

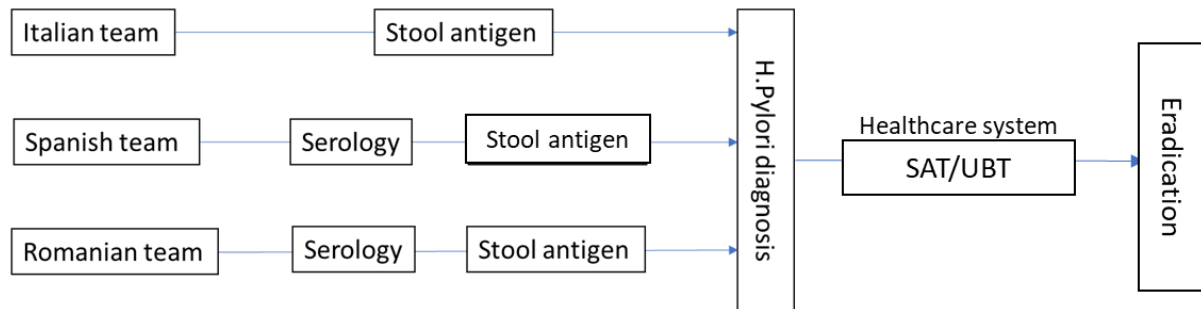
	person usually obtains information about health, to understand how verified and competent his/her primary sources are.
Employment-related variables and previous occupation-related variables.	Variables include the current and past occupation, the current working schedule, employment and working activities. It is investigated whether and how often the person is exposed to working activities requiring the direct contact with biological fluids (e.g. oral cavity, anogenital organs, and sewage/sewer water). Information about past professions is collected too, the aim is to understand, for each previous occupation, the specific profession and working conditions, previous exposure to biological fluids, and the level of hygiene in the workplace and in the place where meals were eaten.
Dietary habits-related variables	Variables include the frequency with which specific nutrients were consumed, such as vegetables, yogurt, cheese, and milk, carbohydrates, fizzy drinks, red meat, seafood, and poultry. Information on salt, spices, and coffee intake is collected too. The habit of washing vegetables, fruits, and his/her own hands before meal is investigated along with the household water source and drinking water source.
Variables related to alcohol consumption and tobacco use	Smoking habit is investigated, including passive smoking, and alcohol intake both in terms of frequency and amount, and type of drink (wine, beer, spirit, etc.).
Medical History-related variables, including both family and personal history.	Family history: the interview investigates whether there are/have been first-degree relatives with cancer diagnosis and in which site. A family history of gastro-duodenal ulcer and HP infection is collected, too. Personal history: the person is asked to report on any known disease, including occupational diseases and cancer.
Variable on the presence of specific symptoms in the past 3 months.	The person is asked to report on any gastrointestinal symptoms and their frequency. Symptoms include epigastric pain/discomfort, retrosternal burning, regurgitation, nausea, belching, early satiety, loss/change of appetite, and vomiting. The interview also focuses on how gastric symptoms (if any) impact the work and the daily activities of the person.
Pharmacological history-related variables.	The person is asked to report about any drug intake in the past three months. Drug categories include gastroprotection, antacids, non-steroid anti-inflammatory drugs, opioids, and antibiotics. The use of vitamin supplements and probiotics is also collected.
Emotional Exhaustion-related variables.	Variables are collected through the Emotional Exhaustion Questionnaire. The person is asked to report how often in the past month he/she experienced feeling worn out from the work, feeling overworked, feeling used up at the end of the workday, feeling to be at the end of his/her own capacity to cope at work, and feeling fatigued when getting up from rest.
Behavioural and Sociocultural-related variables.	The interview investigates how the person perceives his or her own health, his/her degree of awareness, and how in control of his/her health the person feels. Information about social inclusion and economic status is also collected. Information on the knowledge on HP infection and HP-related disease is also included.
Variables related to the interview process itself.	At the end of the interview, additional variables are collected about the interview process itself, also to understand if other factors may influence the interview outcome. Variables include the completion time, how clear the instructions were, how clear the interviewer was, and how difficult were the questions.

6.7 Laboratory diagnostic test

There are **no specific** country guidelines for establishing diagnosis for H.P in Spain, Italy, and Romania. The World Gastroenterology Organization states that the decision to test for *HP* should only be made with therapeutic intent, and the applicability of each diagnosis indication in different regions will depend on the prevalence of infection and disease, resources, competing needs, and individual patient factors.

Two main screening modalities will be utilized for HP screening among workers according to different countries, as shown in Figure 2, and **Table 4**.

Figure 2: Laboratory test for screening and eradication confirmation of HP.



- Laboratory test modality should adhere to the country's laws, regulations, and EU standards.
- Serology Immunoglobulin G, A, and/or M positive will be warranted for stool antigen test to confirm HP infection.
- HP stool antigen test positive will establish the diagnosis of HP infection.
- HP stool antigen test negative proves no active infection.

Table 4: Modalities of laboratory tests in different countries

Country	Laboratory test	Company brand
Italy	Stool antigen test	HP SCREEN CHECK TEST – Stool Antigen Autotest – IHP-602H
Romania	Serology test	Helicobacter pylori IgM Elisa – IBL International - RE56391 Helicobacter pylori IgA Elisa – IBL International - RE56371 LIAISON H.pylori IgG – Diasorin - 318980
	Stool antigen test	LIAISON Meridian H. pylori SA – Diasorin – 318200
Spain	Serology test	Helicobacter pylori IgM Elisa – IBL International - RE56391 Helicobacter pylori IgA Elisa – IBL International - RE56371 LIAISON H.pylori IgG – Diasorin - 318980
	Stool antigen test	HP SCREEN CHECK TEST – Stool Antigen Autotest – IHP-602H

6.8 Collection of specimens, storage, preparation, and testing procedure

Collection of specimens, storage, and testing procedures will be carried out by occupational health staff or laboratory-trained technicians, according to the instructions for use, and good laboratory practice compliance of each country.

The location collection of specimens, storage, preparation, and testing procedures will be done in the occupational health services or local laboratories.

6.9 Communication of the test results

The individual report of the HP test will be handed out to each participant, according to the procedures available in each laboratory and OH medical unit. The OH/laboratory medical staff have to take all necessary measures to ensure the confidentiality of test results. The OH doctor will directly discuss the results with each participant as soon as available and explain how the results should be interpreted. Test results will be recorded in the dedicated logsheet of each subject that will be harmonized with each center.

The OH doctor will counsel all positive subjects regarding the HP infections, risk factors, and available options for diagnosis and treatment. The OH medical doctors and staff in each center will receive local training on test interpretation and guidance on personal communication and counseling services offered to participants.

If the subject consents, the test results can be shared with the family members.

6.10 Link with the healthcare system for the subject with a positive HP infection

The OH staff will counsel all HP-positive subjects regarding HP causes, risk factors, available options for diagnosis, and treatment. Education materials regarding HP will be provided.

All workers who test positive will be referred to the healthcare system, based on the local medical practice. Each center will develop a local procedure for this step, and keep track records on the referral of each participant to the diagnostic and treatment center.

After 6 months, all centers will seek to collect data on diagnosis, treatment, and post-treatment evaluation in a harmonized format, on top of a final questionnaire.

The household members of workers diagnosed with HP will be contacted with the permission of the index subject and will be invited to receive counseling and recommendations for screening via the healthcare system.

6.11 Follow-up of subjects diagnosed with HP

All HP-positive workers will be invited for a follow-up visit six months after the HP infection confirmation. The OH medical team will collect all available information on treatment, side effects, compliance, and eradication using any available source (medical documents, reports, records, etc). The follow-up information will be recorded using a standardized form, as shown in **Table 7**. Depending on the context, the possibility of conducting a final SAT by the research team to prove no active infection.

6.12 Study outcomes, follow up processes, and implications

This intervention consists of testing workers for *Helicobacter pylori* (HP) chronic infection. The identification of infected subjects could allow us to establish the risk condition for *Helicobacter*-related diseases, which include chronic gastritis, peptic ulcer, gastric cancer, gastric mucosal-associated lymphoid tissue lymphoma (MALT), and extra-gastric diseases such as idiopathic thrombocytopenic purpura, vitamin B12 deficiency, and iron deficiency anemia⁴.

Despite most HP infections having an almost asymptomatic course, all chronically infected individuals develop chronic gastritis, which can become active in conjunction with concomitant factors such as tobacco smoking, poor diet, and psychogenic stress. According to the HP World Gastroenterology Organization global guidelines, a recently revised classification of gastritis has recognized *H. pylori*-associated dyspepsia as a distinct entity and incorporated it into ICD-11. The classification also highlights the significance of *H. pylori*

⁴ Katelaris P, Hunt R, Bazzoli F, Cohen H, Fock KM, Gemilyan M, Malfertheiner P, Mégraud F, Piscoya A, Quach D, Vakil N, Vaz Coelho LG, LeMair A, Melberg J. *Helicobacter pylori* World Gastroenterology Organization Global Guideline. J Clin Gastroenterol. 2023 Feb 1;57(2):111-126.

gastritis as the precursor lesion that leads to peptic ulcer disease and gastric cancer, irrespective of whether symptoms are present⁴.

Persons with chronic HP infection experience symptoms of unknown etiology—such as epigastric pain, discomfort, retrosternal burning, regurgitation, nausea, belching, melena, early satiety, bloating, loss or change of appetite, and vomiting—that decrease their quality of life. Our questionnaire includes all of these conditions. We will obtain the questionnaire before the intervention and six months after the intervention; therefore, we will be able to determine the benefit of eradicating HP in terms of quality of life.

Moreover, we will provide educational materials regarding HP for HP-positive workers and their family members. This will improve their knowledge about HP infection and establish risk factors for gastric cancer besides HP, such as smoking, salt intake, and low fresh fruit and vegetable intake. An important aspect of HP infection is that familial aggregations of stomach cancers might be explained, at least in part, by familial clustering of HP infection. Eradication of HP would therefore represent a benefit for the offspring and other family members. Finally, large-scale eradication could represent an advantage not only for individuals but also for the population at large, as the reservoir of the infection would decrease, leading to a decreased prevalence of human infection with long-term benefits to healthcare systems.

Aims of this intervention include: (i) description of *Helicobacter pylori* prevalence and determinants among different categories of workers in different European countries; (ii) testing the feasibility of an occupational-based *Helicobacter pylori* screening program. Our main outcome is the definition of *Helicobacter pylori* prevalence among the study population. Additionally, we will assess the participation rate in the proposed intervention and compare these rates among different study settings (e.g., different companies, working categories, countries). Collaboration with other work-packages will allow us to estimate the cost-effectiveness of *Helicobacter pylori* screening in the workplace and investigate behavioral factors related to its implementation.

We will follow up with *Helicobacter pylori*-positive subjects at six months. Positivity will be assessed through a fecal test. Follow-up will be performed through direct contact with infected subjects (e-mail or phone-call, based on the center's strategy). The infected individuals will complete a follow-up questionnaire to investigate whether they have taken any action, through the general practitioner or other physicians, based on their infection status. We will collect information regarding the steps of *Helicobacter pylori* management with reference to guidelines, including questions on possible treatments undergone, treatment duration, compliance with treatment, adverse effects of treatment, repetition of confirmation tests, and timing. We will also collect feedback on the intervention to assess the quality of the subjects' experience. Moreover, the follow-up contact will serve to recommend that positive subjects test their adult family members due to the increased risk of household transmission.

This intervention will have important implications for public health: we will provide updated data on *Helicobacter pylori* prevalence, which is dynamic and varies by geographical area and type of population. This data will be based on highly sensitive tests, representing a recent picture in different European countries. We will identify subjects at higher risk for highly incident stomach diseases, including gastric cancer. Identification of infection allows management of the risk condition and potentially resolves symptoms (in symptomatic individuals) and prevents or reduces the risk of *Helicobacter pylori*-related diseases, including gastric cancer (in all subjects).

Additionally, our data will provide useful information to understand the feasibility of (i) *Helicobacter pylori* screening in Europe and (ii) occupational-based cancer screening, understanding the cost-effectiveness and factors related to successful implementation. Furthermore, our intervention supports health education regarding cancer prevention and specifically *Helicobacter pylori*-related risks, which are often underestimated and poorly understood by the general population. Identifying positive workers will help identify clusters of high-risk subjects, namely family members of infected individuals. By recommending screening extension to their families, we will reach a broader population and disseminate health literacy about *Helicobacter pylori* as an important risk factor for gastric cancer. Lastly, our intervention could

increase health awareness within the medical community and occupational healthcare providers, supporting the Total Worker Health approach at the occupational level.

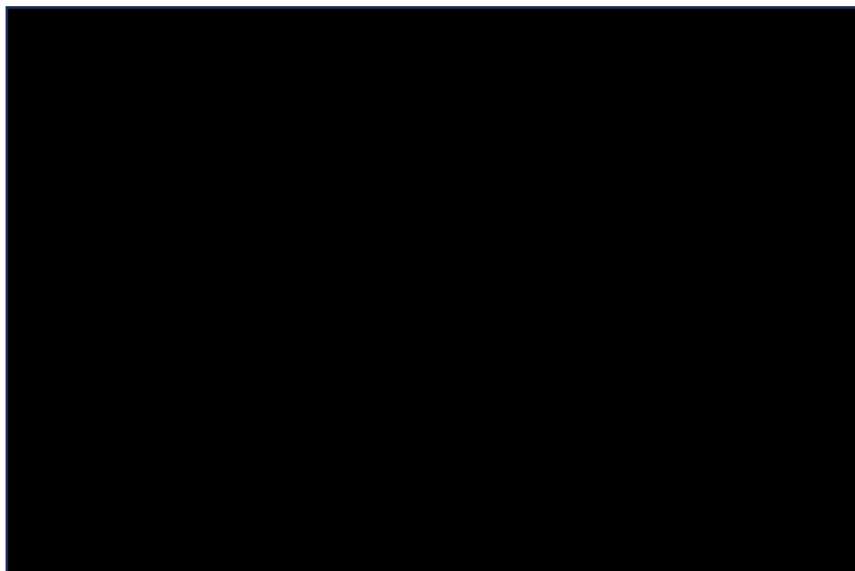
Compliance with treatment and management of failed eradication, even though participants are followed by public health systems.

Our intervention includes recommending that *Helicobacter pylori*-positive workers contact a physician for the management of the infection, particularly to evaluate antibiotic treatment. We will emphasize the importance of treatment compliance (i.e., adherence to the treatment). We are also interested in exploring the types of actions undertaken by the worker, as well as by the general practitioner or any other professional contacted for *Helicobacter pylori* management. Specifically, we will address treatment compliance in the follow-up questionnaire, along with other aspects related to infection management (such as the type of action undertaken, the type of professional contacted, the type of treatment received, whether any confirmatory test has been performed, and the timing of such tests relative to the end of therapy). The work package does not include any direct treatment action but will instead collect information regarding the process following *Helicobacter pylori* detection. In fact, the aim is to explore whether the proposed screening has an impact on medical procedures, what type of procedures are undertaken, and whether they adhere to guidelines. For example, we will evaluate whether the positive workers who have been treated with antibiotics will be retested at the end of the treatment. In addition, we will collect information on the exact timing of any subsequent test in order to verify its sensitivity (which is preserved if the second test is performed more than 2 months after the end of antibiotic therapy).

6.13 Archives and computerized data

Each subject will be attributed with a unique, identification number (ID). The link with the name and other personal information will be available only to authorized staff of the local research team. Forms (hard copies) will be labeled with the corresponding ID and archived in local centers according to the protocols locally available and in line with the CPW project's DMP. Each raw dataset collected in the implementation centers will be entered into the central data repository via RED Cap, using the eCRF developed by WP1. The management of data will follow the DMP.

Figure 3: CPW data flow.



6.14 Data sharing

Data generated at different stages of the pilot study will be managed, organized, and released using procedures and infrastructure that are being developed in the DMP, describing the principles,

standards, methods process, and policies regarding the storage, curation, and dissemination of the data collected in CPW under FAIR principles. The data management at local level is under the responsibility of the specific partner who generated the data.

The data-sharing procedures, including measures to guarantee privacy and data protection, are subject to a joint data controller agreement between all the research teams involved in the project.

6.15 Ethics

The intervention must be carried out in line with the highest ethical standards and the applicable EU, international, and national law on ethical principles. The patient's informed consent template, comprising the minimum items required by the intervention, has been developed. Implementation centers can adapt or use a local variant, provided all minimum requirements are included. Questionnaires and forms to collect data from the participants have been developed by a working group comprising the PIs and other specialists from each implementation center, and are annexed to this protocol. Each center is responsible for the translation/adaptation of these documents to the local languages and context. A pilot test on a subset subject of the intended population will validate the questionnaires in each center/country.

The intervention requires appropriate local ethical approval. The intervention can start in the implementation center once ethical and administrative authorizations are in place.

6.16 Occupational Healthcare as a Context of Implementation Strategies and Implementation Outcomes

The CPW project is a study of the implementation of new practices. Implementation research concerns the impact of implementation strategies on the uptake of recommended practices and contextual factors that influence the uptake. The European Agency for Safety and Health at Work, in its publication titled "Exposure to carcinogens and work-related cancer: A review of assessment methods," provides an overview of risk factors linked to work-related cancers. Notably, they emphasize the need for proper preventive measures for biological agents like HP. Such measures would involve considering these agents when estimating exposure in specific job roles to highlight potential risks.

Occupational physicians can recommend HP testing for workers, emphasizing the potential benefits of screening for gastric conditions and cancer. Implementing an HP screening program may offer numerous advantages, including promoting overall well-being at work, fostering a healthier workforce, enhancing job performance, **and potentially contributing to a more supportive and health-conscious work environment**⁵. It could also minimize absences due to gastric issues, potentially extends screening benefits to employees' families, decreases the workplace reservoir of HP, targets the optimal age group for gastric cancer prevention, supports general practitioner-patient management, and can integrate into broader existing health promotion programs⁶.

7 Conclusion

The WP2 task is multifaceted, involving designing and coordinating pilot projects for HP screening and eradication, analyzing collected data to assess the effectiveness and determinants of HP infection, and planning for larger-scale implementation of these prevention strategies. A key aspect of WP2 is the engagement with public health administrations and community stakeholders to enhance population adherence to the program at the community level through occupational health surveillance. This initiative

⁵ Collatuzzo G, Fiorini G, Vaira B, Violante FS, Farioli A, Boffetta P. The role of the occupational physician in controlling gastric cancer attributable to *Helicobacter pylori* infection: A review. *Prev Med Rep.* 2021 Aug 18;24:101527

⁶ Fernandez-Tardon G, Gan RK, Rodriguez-Suarez MM, Tardon A, Arcos-González P. Total worker health® based *Helicobacter pylori* public health prevention strategy. *Curr Opin Epidemiol Public Health.* 2024 May 28;3(2):33-39.

is grounded in the concept of 'Total Worker Health', integrating occupational health surveillance with broader health promotion. The approach leverages the worker-health professional relationship for general health promotion, extends the health benefits to the worker's household, and utilizes the periodic nature of occupational health visits for effective follow-up.

8 Annex 1: GENERAL AND GASTROENTEROLOGICAL HEALTH STATUS ASSESSMENT QUESTIONNAIR

HPROS study: Prospective observational study conducted among workers.

The following questionnaire is aimed at collecting sociodemographic, behavioral and clinical information.

Please clearly indicate your answers, whether positive or negative, by entering a cross or another sign in the corresponding box. If you are uncertain about an answer, please leave it blank or indicate 'I don't know'.

When you find written "specify", write down your answer in the space marked by ellipsis.

Identification number (assigned by the researcher; also to be reported on the second page)

.....

NAME AND SURNAME

ID CODE:

Mobile phone number..... E-mail

DATE OF COMPILATION.....

TIME.....

Questionnaire

Section 1: Sociodemográfico

1. Sex	
<input type="radio"/> Male	<input type="radio"/> Female
<input type="radio"/> Other/intersex	
2. Marital status	
<input type="radio"/> Single	<input type="radio"/> Married
<input type="radio"/> Divorced	<input type="radio"/> Widow
2.1 Living together with partner	
<input type="radio"/> Yes	<input type="radio"/> No
3. Date of birth: _____	
4. Household population	
<input type="radio"/> 1	
<input type="radio"/> 2-4	<input type="radio"/> >4
<input type="radio"/> Childrens: _____	
5. Current address:	
<input type="radio"/> Rural	<input type="radio"/> Province: _____
<input type="radio"/> Urban	
6. Education	
<input type="radio"/> University (Bachelor, Master, Phd)	<input type="radio"/> Technical/Professional high school
<input type="radio"/> High school/ sanitary school	<input type="radio"/> Primary/Secondary school (or lower)
Total year of education: _____	
6. Height: _____	Weight: _____
7. Blood Group: _____	
8. Where do you obtain information about health from? Multiple answers allowed.	
<input type="radio"/> Social media platforms (Facebook, Twitter, etc.)	<input type="radio"/> Online information (excluding social media)
<input type="radio"/> Close network such as friends and relatives	<input type="radio"/> Family doctor or other healthcare professional
<input type="radio"/> Occupational specialist at work	<input type="radio"/> Mass-media
<input type="radio"/> Specialty journals, guides, articles, congress	

Section 2: Occupational

1. Occupation:	Healthcare : _____ Others : _____
*Remark: a. Make the question open, then reclassify them after data collection b. Define H.p. occupation risk – High risk vs Low risk	
2. Total seniority at work (in years)	Seniority in the current workplace (in years)
3. In your work, do you regularly perform or assist investigative/interventional and invasive procedures that may cause contact with the oral cavity or anogenital organs? (examples: intubation, patient hygiene, bladder catheterization, removal of bladder catheter, gynecological examination...)	
<input type="radio"/> Yes	<input type="radio"/> No
4. Do you ever work/have you worked for at least 1 month in a digestive or respiratory endoscopy department?	
<input type="radio"/> Yes	<input type="radio"/> No
5. Are you subjected to contact with sewage/sewer water in your workplace?	
Direct contact	
<input type="radio"/> Yes	<input type="radio"/> No
6. Current work schedule:	
Hour/day: _____	Overtime : Yes/No
Night shift: Yes / No	On call : Yes/No

7. Previous occupation and their period (specify type of work and years during which it was carried out)

Section 3: Diet (Short Form Dietary Questionnaire)

Please tick how often you eat at least ONE portion of the following foods & drinks: (a portion includes: a handful of grapes, an orange, a serving of carrots, a side salad, a slice of bread, a glass of soda).

(Please only put one tick, but answer EVERY line)

	Profession	Work place	Exposure time (years)	Occupational exposure (eg: Body fluids, sewer water)	Work schedule				Hygiene at work (hot water, shower, soap)	Protection		Place where food is kept / served		
					hours/ day	night shift	overtime	on call/ on duty		general	individual	at work station	in dedicated space	I don't eat at work
1														
2														
3														
4														
5														
6														
7														

		Rarely or Never	Less than 1 a week	Once a week	2-3 times a week	4-6 times a week	1-2 times a day	3-4 times a day	5+ a day
Fruit	Fresh	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Processed (Tinned/ pickled)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vegetables (not including potatoes)	Fresh	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Processed (Tinned/ pickled)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Yoghurt/ Probiotics		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cheese / Milk		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pasta/Rice		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Biscuits, cakes, chocolate, sweets, ice cream		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non alcoholic fizzy drinks (not sugar free or diet)		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
MEAT (Beef, Lamb, Pork...)	Fresh	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Processed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seafood (Mollusk...)	Fresh	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Processed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Poultry (Chicken, Rabbit, Turkey...)	Fresh	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Processed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Do you put additional salt in your food?									
<input type="radio"/> Yes					<input type="radio"/> No				
5. Do you eat spicy food (e.g Mexican, Indian food)?									
<input type="radio"/> Yes					<input type="radio"/> No				
6. Do you wash raw vegetables/fruits before consumption?									
<input type="radio"/> Yes					<input type="radio"/> No				
7. Do you drink unpasteurized milk/milk products?									
<input type="radio"/> Yes					<input type="radio"/> No				
8. Do you drink coffee?									
<input type="radio"/> Yes					<input type="radio"/> No				
If YES how many/day									
9. How often do you eat out? (take away or dining in a restaurant/cafe)									
<input type="radio"/> Never					<input type="radio"/> Rarely (1-3 times a week)				
<input type="radio"/> Often (4-6 times a week)					<input type="radio"/> Everyday				
<input type="radio"/> Very rarely (1/month or less)					<input type="radio"/>				
10. Household water source:									
<input type="radio"/> Treated water network					<input type="radio"/> Communal fountain				
<input type="radio"/> Individual borehole					<input type="radio"/> Bottled water				
11. Drinking water source									
<input type="radio"/> Tap water					<input type="radio"/> Bottled water				
<input type="radio"/> Communal fountain					<input type="radio"/> Others: _____				
12. Do you wash your hand before meal									
<input type="radio"/> Yes					<input type="radio"/> No				

Section 4. Medical History

Family:

1. First degree relative has/ had cancer (mark all concerned):		<input type="radio"/> Yes	<input type="radio"/> No
<input type="radio"/> Mother	<input type="radio"/> Father		
<input type="radio"/> Brother/ Sister	<input type="radio"/> Grandparents		
If YES, please mention where the cancer was localized:			
<input type="radio"/> Stomach	<input type="radio"/> Colorectal		
<input type="radio"/> Breast	<input type="radio"/> Not sure		
<input type="radio"/> Other: _____			
2. Family history of gastro-duodenal ulcer?		<input type="radio"/> Yes	<input type="radio"/> No
3. Family history on H.P infection?		<input type="radio"/> Yes	<input type="radio"/> No

Personal:

1. Are you known and/or in treatment for the following diseases?			
<input type="radio"/> Cardiovascular	<input type="radio"/> Mental	<input type="radio"/> Diabetes mellitus	<input type="radio"/> Duodenal ulcer
<input type="radio"/> Epstein Barr V	<input type="radio"/> Hepato-intestinal	<input type="radio"/> Tuberculosis	<input type="radio"/> Haematological
<input type="radio"/> Pernicious anaemia	<input type="radio"/> Kidney	<input type="radio"/> Fungal infections	<input type="radio"/> HVB, HVC
<input type="radio"/> Neurological	<input type="radio"/> Immunodeficiency disease	<input type="radio"/> Inflammatory bowel disease	
<input type="radio"/> Thyroid disease	<input type="radio"/> Allergy	<input type="radio"/> Others(non-gastric): _____	
2. Occupational diseases	<input type="radio"/> NO	<input type="radio"/> YES	If Yes, please mention which: _____
3. Cancer	<input type="radio"/> NO	<input type="radio"/> YES	If Yes, please mention the type of cancer: _____
4. Gastric diseases	<input type="radio"/> No	<input type="radio"/> Yes	If Yes, please choose:
<input type="radio"/> Gastro-eosophageal reflux	<input type="radio"/> Gastritis	<input type="radio"/> Gastric Polyps	<input type="radio"/> Operated stomach
<input type="radio"/> MALT Lymphoma	<input type="radio"/> H.P infection	<input type="radio"/> Gastric ulcer	<input type="radio"/> Gastric endoscopic interventions
<input type="radio"/> Others: _____			

Symptoms

How often you have had each of the following symptoms in the past 3 months?

GI symptoms	Never	<1 time per month	1 time per month	1 time per week	1 time per day	1 or more times a day
Epigastric pain/discomfort	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Retrosternal burning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Regurgitation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nausea	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Belching	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Melena (black stools)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Early satiety	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bloated	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Loss / change of appetite	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vomit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vomit with blood	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Others: _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How severe does your gastric symptom affect you in your work ?
 (0: No symptoms at all, 1:Very Mild, 10: Very severe)
 0-1-2-3-4-5-6-7-8-9-10

How severe does your gastric symptom affect you in your daily activity ?
 (0: No symptoms at all, 1:Very Mild, 10: Very severe)
 0-1-2-3-4-5-6-7-8-9-10

Section 5. Pharmacological history

Did you have had each of the following medications in the past 3 months?

Drug class	Usage	
IPP (omeprazol, panto-, eso-)	<input type="radio"/> YES	<input type="radio"/> NO
Antacids	<input type="radio"/> YES	<input type="radio"/> NO
Motility modulators	<input type="radio"/> YES	<input type="radio"/> NO
NSAIDs	<input type="radio"/> YES	<input type="radio"/> NO
Corticosteroids	<input type="radio"/> YES	<input type="radio"/> NO
Opioids (codeine, papaverine)	<input type="radio"/> YES	<input type="radio"/> NO
Antibiotic	<input type="radio"/> YES	<input type="radio"/> NO
Biological therapy	<input type="radio"/> YES	<input type="radio"/> NO
Others		

Section 6. Emotional Exhaustion (ORCHESTRA EEQ)

The following statements are related to your experience in your work in the past month, please indicate what you think in relation to each of them by ticking the box that best describes your opinion using the following scale of response:

In the past month,	Never	A few times a year or less	Once a month or less	A few times a month	Once a week	Few times a week	Every day
1. I feel worn out from my work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I feel I am overworked.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I feel used up at the end of the workday.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I feel like I am at the end of my capacity to cope at work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I feel fatigued when I get up from rest and face another day on the job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Section 7. Smoking and Alcohol

Smoking

Do you smoke?	
<input type="radio"/> Yes	<input type="radio"/> No
If Yes, How many years have you been smoking ?	
How many cigarettes/ day?.....	
Are you an Ex-Smoker?	
<input type="radio"/> Yes	<input type="radio"/> No
If Yes, how many years you used to smoke?	
How many cigarettes/ day did you smoke?	
Passive smoker :	
<input type="radio"/> Yes	<input type="radio"/> No
If yes, How many years? _____	

Alcohol

Do you drink Alcohol?	
<input type="radio"/> Yes	<input type="radio"/> No
If yes, how many units/week? _____	
Type of alcohol :	
<input type="radio"/> Wine	<input type="radio"/> Beer
<input type="radio"/> Cider	<input type="radio"/> Spirit
<input type="radio"/> Home-ferment	<input type="radio"/> Others: _____

Section 8: WP5 Specific

1. Would you describe your diet as healthy?		
<input type="radio"/> Yes	<input type="radio"/> Somewhat	<input type="radio"/> No
2. Which statement would best describe your health status?		
<input type="radio"/> I generally feel absolutely healthy.	<input type="radio"/> I only experience minor health issues from time to time.	
<input type="radio"/> I have major and/or chronic health issues.	<input type="radio"/> I am constantly sick.	
3. Which statement would best describe your understanding of health, health practices, and health issues?		
<input type="radio"/> I am fully aware of my health issues and also have a solid understanding of other health matters.	<input type="radio"/> I am fully aware of my health issues, their causes, and how I should take care of myself.	
<input type="radio"/> I understand I have some health issues, but I don't know exactly why and what to do about it.	<input type="radio"/> My doctor tells me that I have severe health issues, but I do not really understand what it means and what I should do with this.	
4. Do you have savings/financial funds that (in case of losing your income) could cover your expenses for at least 3 subsequent months?		
<input type="radio"/> Yes	<input type="radio"/> No	
5. Do you have a group of close friends you feel you belong to?		
<input type="radio"/> Yes	<input type="radio"/> No	
If yes, how often do you meet your close friends?		
<input type="radio"/> Never	<input type="radio"/> Less than once a month	
<input type="radio"/> Once a month	<input type="radio"/> Few times per month	
<input type="radio"/> Few times per week	<input type="radio"/> Everyday/Daily	
6. What foreign languages are you skilled at?		
<input type="radio"/> I don't speak any foreign language.		
..... __	Reading	__ Speaking __ Writing
..... __	Reading	__ Speaking __ Writing
..... __	Reading	__ Speaking __ Writing
Please mark your answer on the scale which applies to you.		
7. Things that happen in my life most often depend on: (1: Circumstances, situations, and other people, 10: My own decisions, efforts, and behavior.)		
1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10		
8. To what extent do you feel responsible for your health? (1: To very little extent, 10: To a great extent)		
1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10		

Pilot survey feedback

Completion time : _____

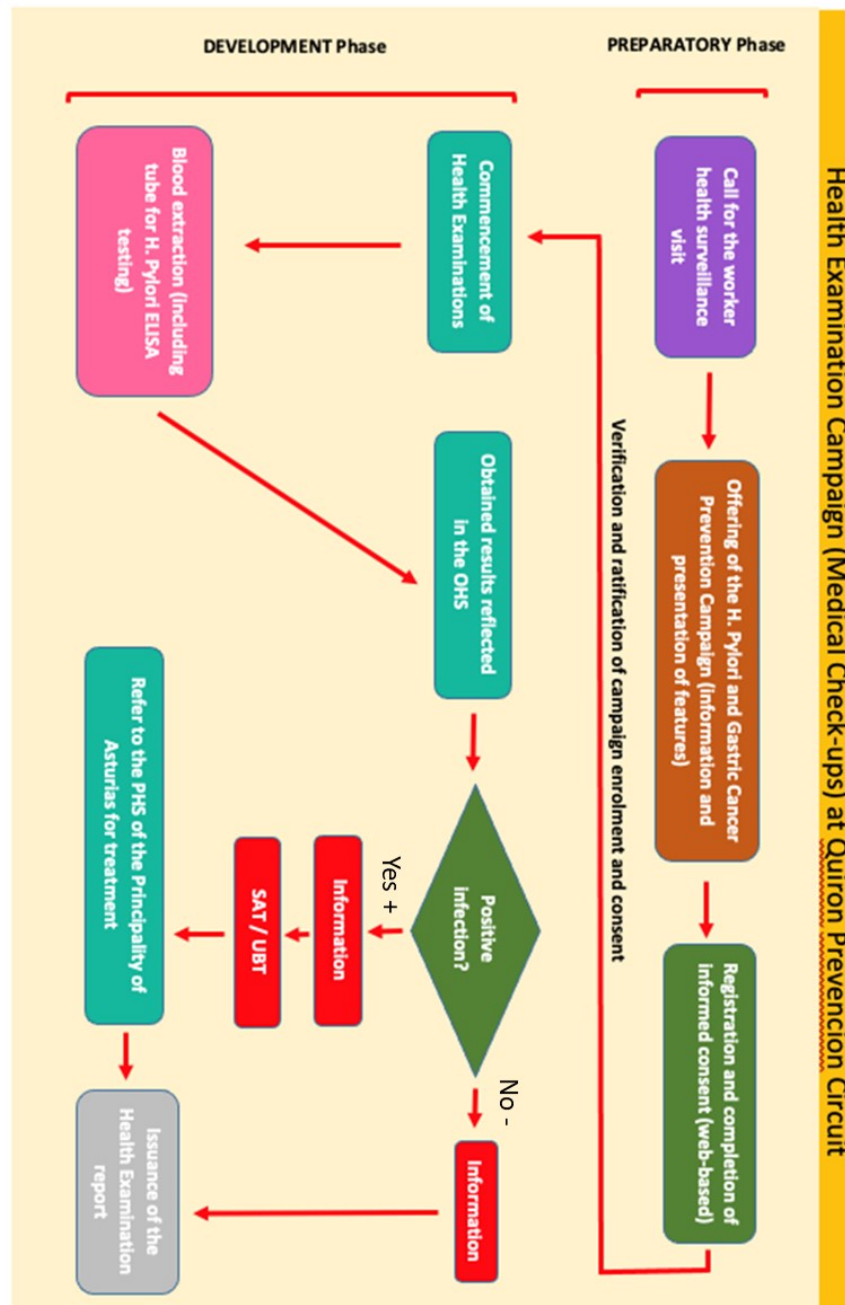
Interviewer (Doctor):

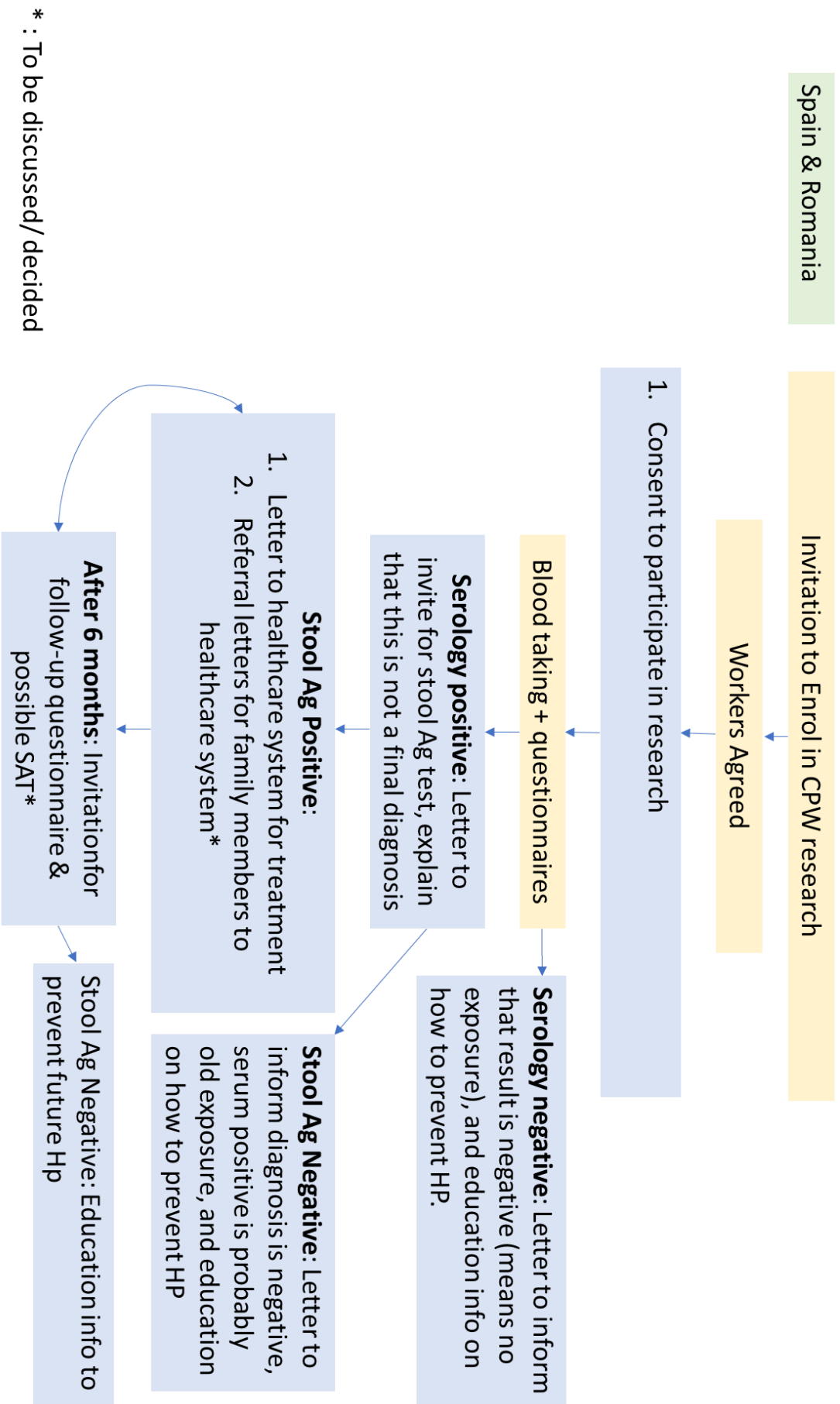
1. Were the interview instructions clear and easy to follow?	
<input type="radio"/> Yes	<input type="radio"/> No
<input type="radio"/> If No, please specify why: _____	
2. Were there any technical issues or challenges encountered while conducting the interviews?	
<input type="radio"/> Yes	<input type="radio"/> No
<input type="radio"/> If Yes, please specify what: _____	
3. Do you have any suggestions or feedback on how to improve the interview process?	
<input type="radio"/> Yes	<input type="radio"/> No
<input type="radio"/> If Yes, please specify: _____	

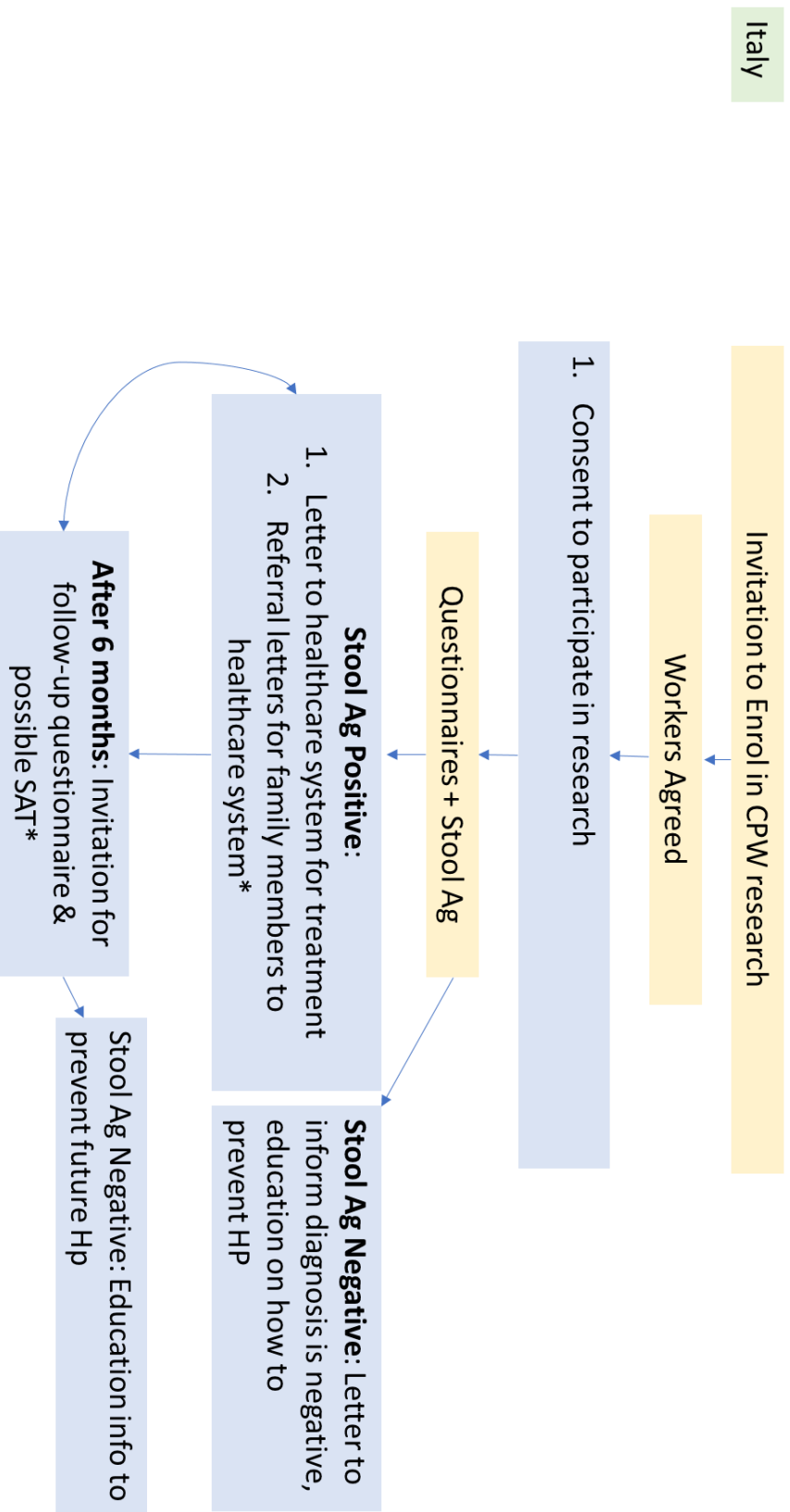
Interviewee (Patient):

1. Were the questions asked by the interviewer clear and easy to understand?	
<input type="radio"/> Yes	<input type="radio"/> No
<input type="radio"/> If No, please specify why: _____	
2. Did you encounter any difficulties in providing answers during the interview?	
<input type="radio"/> Yes	<input type="radio"/> No
<input type="radio"/> If Yes, please specify how: _____	
3. Do you have any suggestions or feedback on how to improve the interview process or questions?	
<input type="radio"/> Yes	<input type="radio"/> No
<input type="radio"/> If Yes, please specify: _____	

9 Annex 2: HP screening Overall flow chart







* : To be discussed/ decided

10 Annex 3: Tables

Table 5: Description of the implementation centers for HP

Name of the implementation center where the pilot study is implemented (acronym in the project)	NACE code	Total number of employees	Principal investigator (PI) for the HP intervention	Contact email for the PI

Table 6: Prevention and health promotion initiatives in the implementation centers

Name of the implementation center (acronym in the project)	Testing program for HP (before the current project)					Other preventive program for HP, before the current project			prevention program for cancer (past or current)			health promotion program (past or current)		
	Pre employment	Regular/ Periodic	In case of incident/ accident	Free testing offered	No testing program	Yes	No	Don't know	Yes	No	Don't know	Yes	No	Don't know

Table 7: Link with treatment and eradication

Name of the implementation center(acronym in the project)	In case of positive workers, how will be ensured the link with precise diagnosis and cure? Please describe the pathway and who is involved	In case of workers with confirmed HP infection, how do you plan to collect information about diagnosis and treatment? Please describe the source of information and who is involved



CPW is a project funded by the European Union's Horizon Europe – Research and Innovation funding programme (2021 - 2027), under grant agreement (GA 101104716). Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.