

EURONEWS MRPH

The Newsletter of the European Network of Medical Residents in Public Health

Next EuroNet MRPH Meeting

Utrecht 5 - 7th December 2019

Editorial

Dear EuroNetters,

We are really happy to present the third and last EuroNet MRPH Newsletter of the year. It has been an exciting year for us all, with a lot of activities, meetings and new people. With the privilege of being part of the board of EuroNet MRPH, we took part in wonderful projects and tried to help as many residents as possible.

Now we are writing this from our beloved cities, however, in a couple of days, Utrecht will be the scenario of the EuroNet's Winter meeting. The 5th of December at 13:00 we will all be in Utrecht, meeting for the fourth time this year (yep, I am counting the European Public Health Conference in Marseille). Utrecht Meeting is another amazing opportunity to meet again and strengthen our connections. We will also be able to learn about occupational health, forensic medicine, population screening and smart health. It will also be the perfect moment to know more about other opportunities of training during the residency and of course to practice your communication skills in other languages!

Anyway, without further ado, lets enjoy the last newsletter of the year!

See you all in Utrecht,

Yours sincerely,

The EuroNet MRPH board,

Laura, Gisela, Maria Francesca, Ana



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EuroNet Winter Meeting 2019: Welcome to Utrecht!

Utrecjht Organising Commitee

As you have undoubtedly heard by now, this year's Winter Meeting will be taking place in Utrecht, The Netherlands. We are thrilled to host this meeting and would like to use this opportunity to present the organising committee (OC) and tell you a little more about the location, the programme and the city.



Fig.1 The Organising Committee

The OC

We have it a little easier than Igor in Vienna – hats off to you again Igor – as there are seven residents involved in organising this meeting: Gijs, Katja, Lilian, Barry, Noortje, Maya and Michelle. We are quite a mixed group: two girls versus five boys, five public health residents versus two occupational health residents, two EuroNet meeting veterans versus five first timers. With the invaluable help of Laura and Gisela, we have worked hard to put together an interesting and fun meeting for you. If you have any questions, for example how to pronounce our names, just ask!

The location

The meeting will be held in the Schola Medica building (Orteliuslaan 750). As the name suggests, this building is used to teach and train medical doctors and residents. Courses on offer include for example emergency medicine, prevention and palliative care, but also a course in burn-out prevention for residents (which, as we all know, can really come in handy). The meeting is kindly hosted by SBOH, the employer of Dutch public health residents, together with VVAA, an association for medical professionals. It is a little outside the city centre, but quite easy to reach by bus or, of course, by bike.

The programme

By now you have probably seen the program, either in the meeting guide or through one of the other communication channels. Allow us to explain a little bit on the rationale behind it.

For the daytime programme, we set out to showcase a little bit of what public health in the Netherlands is like. We specifically wanted to include occupational health as well, as for us, it is very interwoven with public health – as you can already tell from the composition of our OC.

For the nighttime programme, we wanted to include as much Dutchness as we could. We specifically chose this weekend for the meeting because it is, as you are probably very aware of by now, the weekend of Sinterklaas. If you were not aware of this yet, you will be after the meeting!



Fig.2 The City

The city

Aaaah, Utrecht… The author of this article is not entirely unbiased, but Utrecht is the best city in the Netherlands. Just don't tell all the tourists. It has the charming medieval centre with its beautiful canals, plenty of museums, and a large enough student population to warrant a vibrant nightlife. Plus, if you really really really insist on going to Amsterdam, that's pretty close too, I guess. We collected some to do's and to see's in the meeting guide for you, but if you need any more, just ask.

We have said it many times already, but: if you have any questions, you can always contact us at **wintermeeting2019@gmail.com**.

We look forward to meeting many of you!

Vienna EuroNet Summer Meeting

Igor Grabovac
Center for Public Health
Medical University of Vienna



Fig.3 Laura and Igor

First time in EuroNet history a meeting was held in Austria and first time organized by an individual member. Late July, Vienna was the place to be, as from 25th to 27th of July the Centre for Public Health of the Medical University of Vienna was home to 60 public health residents from around Europe, briefly but exponentially increasing the number of public health residents in Austria. In a fun filled 3 days the participants had the chance to hear more about the public health issues in Austria, get to know aspects of the public health system (or lack thereof) and get information on several other topics of global importance for public health. Here is a day to day breakdown and some highlights of each day.

Day 1: Arrival

At 14:00 clock we started to gather at the Centre and just few minutes behind schedule we started with greetings from the organizer of the meeting and had a brief introduction about the

Medical University of Vienna presented by Prof Anita Rieder, the Vice-Rector of the University and the Head of the Centre for Public Health. This was followed by Prof Bernhard Schwarz who laid down some information about the Centre itself and the public health residency program in Austria. After that we had an EuroNet introduction from the Board and the Leads, each presenting their own respective areas and outlining the projects under their privy. Right after we dived into a lecture about older adults and public health interventions delivered by Prof Thomas Dorner.

The definite highlight of the first day was the welcome drinks party that was made memorable by a leaky fridge, a worried security guard, no air conditioning and waaay too much alcohol. A special shout out went to the representative of the French NC, Romain Lafitte, who got a framed version of the contract he signed during the

Torino Spring Meeting, promising to come to Vienna. As he was not found to be in breach of contract, he was awarded by an applause and cheers from the (not very) drunk residents.

Day 2: Work

No one recovers from a hangover as fast as public health residents (not even surgical residents) so next day we were all already up bright and early eager to learn something new. We enjoyed a line-up of lecturers who gave more insight into female genital mutilation (Dr Elena Jirovsky), quality indicators in hospitals (Dr Claudia Fischer), discrimination and its influence on health (Mag. Daniel Schönherr) and public health interventions in patients with mental health issues (Mag. Agata Laszewska). As the members of NCs were carried off to talk about their own issues, rest of us had an interesting round of scientific presentations of the residents own projects (shout out to Marta from Portugal, Helen from the UK and Martina from Austria). Proudest moment of this day was the successful delivery of food and its preparation done by organizing team (see attached pics). After a bit of rest we met up again to have dinner and went off to have a beer in the city centre. The strongest went off with our very own "Morale Lead" Robin and partied till the wee hours of the morning.

Day 3: EuroNet Day

As it always is with EuroNet meetings, the



Fig.4 Group picture from the 2nd day

last day there was set aside for EuroNet business. Leads gave reports on the workshops and conclusions of their actions. There was some serious voting going on, important discussions on EuroNet internal issues and finally some picture taking. Most of the residents went on to explore the city and then we all met again for an impromptu dinner, followed by an all-nighter again under the guidance of Robin.

On a personal note, organizing the meeting was very stressful but it made me very happy to have support and community that EuroNet brings. It was a pleasure having all of you here, meeting you all and briefly not being the sole resident.

Thanks to all the EuroNetters who came, you made all the sweat and stress totally worth it.

The torch has been passed on to Utrecht and I hope you all have as awesome time as you did in Vienna.

EuroNet Summer Meeting in Vienna - Our First Impression

Marta Lemos ( ) and
Vera Leal Pessoa ( )
Public Health Residents in Portugal

People can tell you so many great things about this experience. The work of all these residents from so many countries making together one Public Health. But you only feel it when you live it!

The Summer Meeting in Vienna absolutely exceeded our expectations. So what to say about our first impression? Just how glad we are to have had this amazing experience that is to attend a EuroNet meeting. The only regret is not having done it sooner.

The 2019 Summer Meeting took place in the Centre for Public Health of the Medical University of Vienna. It's also the only acknowledged institution for residency training in public health in Austria. It was an amazing opportunity! There we hear about public health interventions from European and Austrian perspectives, in various settings: elderly population, migrant woman, mental health, and sexual health and gender minorities. It was very professionally enriching.

Furthermore, it was an opportunity to meet colleagues from other countries and know different professional experiences and

initiatives. It was a very interesting exchange. It's events like these that help bringing people together, motivating the teamwork and networking.

The social program was very rich: we walked through the squares and beautiful gardens, looked the monumental palaces, had dinner in typical brewery, and ate **Sachertorte and Kaiserschmarrn**. We talked and laughed a lot!

Vienna is a dream city for anyone with a romantic interest in history.

It's a beautiful feeling to cycle through the imperial sights of this unique, charming and vibrant city. It's not by chance that it's described as a Europe's cultural and architectural gem.

Here you can say that music is in the air, since Vienna is deeply steeped in classical music, which comes as no surprise looking at the famous composers who helped shape it. But this city will always have a special place in its heart for Klimt, the one artist that will take you on a journey through gold, bright and colour. So, if you think Vienna is all about Schnitzel, think again.

We take this chance to thank for the warmth welcoming, joyful disposition and great organization of this one-man-team, Igor Grabovac. You really helped for this first impression.

At this point we can only say that we are thrilling to repeat this great experience and to meet you all again soon! See you in the next EuroNet Meeting.



Fig.5 City tour!

EuroNet MRPH @ EPH Conference

Gisela Leiras
EuroNet MRPH Vice-President

In this edition of the EPH Conference, in Marseille, EuroNet MRPH, together with EUPHAnxt and Young Forum Gasteiner, promoted one skills building workshop intitled "From soft skills to Health for all".

Soft skills are increasingly needed in achieving successful Public Health (PH) interventions, and as such Public health professionals need more awareness of its powers.

According to Deloitte, soft skill-intensive occupations will account for two-thirds of all jobs by 2030. Soft skills are considered as crucial in numerous situations in the work setting: problem solving, teamwork, leadership development, mentoring, and key PH interventions require Public Health professionals with strong soft skills. For example, vaccination programmes can be complemented by health professionals that have the soft skills to address concerns about vaccination. Having public health teams whose members have a wide variety of perspectives, backgrounds and skills, adds to the need of soft skills proficiency.

Related to the need of soft skills is the need to have contextually appropriate public health interventions, depending on the population, the issue that is being tackled, the political and societal framework, etc. Hence, the most successful interventions have been tailored to fit their target population. As the Sustainable Development Goals (SDGs) call for "health for all", soft skills become an essential skill for professionals to have in order to empathize with the target population and to be responsive to their specific needs

In the first part of the workshop, James Chauvin, former World Federation of Public Health Associations President, introduced the topic, focusing on the main challenges and needs of PH sector in terms of soft skills. James Chauvin referred that there is still few evidences in this area, and that studies should be conducted in order to build capacity for successful public health interventions.

Following the interview to James Chauvin, the audience was split into three groups to dialog about three critical populations that require a dedicated use of soft skills in order to optimize public health interventions and tackle any kind of inequities they are facing: gender and sexual minorities, refugees and migrants, homeless people.

Each group discussion was conducted by a professional working in the referred area: Arjan Van der Star, Vice-President of Gender and Sexual Minorities EUPHA Section, Antonio Chiarenza, Chair of International Network of Health Promoting Hospitals & Health Services Task Force on

Migration, Equity & Diversity and Freek Spinnewijn, Director of Fansea, an European umbrella of NGOs working with homeless people.

After a productive exchange of ideas, we can highlight that:

- LGBTQI+ individuals face various forms of discrimination when trying to access healthcare services or during interactions with professionals;
- Rather than relying exclusively on a preconceived knowledge about migrant cultures, health professionals should improve core communication skills such as open-ended inquiry, reflective listening, and empathy, as a way to respond to the unique needs, values and preferences of individual patients;
- Teams working with people experiencing homelessness need a supportive environment (logistically but also in terms of value and principles selections within the team);
- Generalisations or assumptions, such as labels and cultural stereotypes, may influence health professionals' feelings and behaviours. Therefore, it is essential to detect these assumptions and to analyse and re-consider one's own feelings and behaviours.
- Nonverbal aspects in the health professional-patient interaction, such as (absence of) smiling, an (in)expressive tone of voice and face, (lack of) eye-contact play an important role, as interpersonal judgement relies mostly on nonverbal cues of the interaction;
- A person-centred approach based on dignity, respect, and humanity is key to provide effective services to this vulnerable group.
- Although soft skills are essential to contextualize our interventions and direct our actions, hard skills shouldn't be neglected, and the best technical care must be equally guaranteed;



Fig.6 "From soft skills to Health for All"

- Apart from raising awareness and eliminating prejudice and stigma, soft skills may be needed to build safe and affirming environments and trustful relationships between this groups and healthcare professionals.

As a conclusion it should be noted that health professionals' ability to explain, listen and empathise are crucial, but there are still cultural and historical barriers that must be deconstructed, re-shaping the community believes. Soft skills training should be intensified and present in our university's curriculum and research on soft skills should be conducted to guide its future applications.

The unexplored potential of social marketing for public health

Duarte Vital Brito
Public Health Unit, Central Lisbon Community Health Center

Have you ever felt that changing people's behavior is almost an impossible mission? That many health promotion activities are almost useless? Well, I had... But this year I attended a conference that shaped my public health approach to health promotion: World Social Marketing Conference, in Edinburgh.

As public health professionals we are expected to be active in promoting behavior change in populations. A task that requires knowledge in behavioral sciences, psychology, sociology, among other sciences. While we might not be prepared to do it properly, social marketing is an incredibly useful tool to achieve that purpose. And yes, social marketers do exist!

But what is social marketing about? Jeff French is one of the references in this field and according to him, there are six core principles in social marketing[1]:

- Citizen focused approach;
- Explicit societal goals (SMART);
- Value proposition that considers societal and individual wellbeing;

- Evidence based segmentation to increase efficiency and reach priority targets;
- Competition and barriers analysis;
- Critical thinking, seeking to understand why people think and act as they do.

Audience analysis and segmentation is a particularly important step in health interventions that allows us to target more effectively groups in our community. This is extremely important when we need to reach disadvantaged groups, as homelessness, unemployed or migrants. By using marketing tools, as building personas and consulting focus groups, we can define more homogeneous subgroups to develop messages, design products, choose communication channels and pre-test interventions through formative research[2].

So, social marketing is not definitely social advertising or social media marketing, but a set of concepts drawn from marketing theories to provide a more effective approach to influencing behavioral for a greater social good[3] – Wiebe once asked *"why can't you sell brotherhood and rational thinking like you sell soap?"*[4]. In 1971 Philip Kotler and Gerald Zaltman introduced social marketing as a *"promising framework for planning and implementing social change"*[5]. There are references to social marketing application in health topics since 1960s targeting, per example, maternal and child health, family planning, tobacco control, cardiovascular disease risk reduction and substance abuse prevention[6].

You might wonder if I'm just trying to sell you a concept, but there is evidence supporting this kind of approach. Public health interventions that use social



Figure 7 – There is a need to segment audiences in order to communicate more effectively (March for science funding in Washington DC. Photo by Vlad Tchompalov)

marketing strategies are effective and are currently used by renown institutions like European Centre for Disease Control and Prevention (ECDC). Some successful applications of social marketing principles in hand hygiene and sexual health interventions are reported in an insightful review by ECDC[7].

Some global trends about these topics were described by Chang, Kotler and Lee, and I consider building partnerships and edutainment as attractive ideas. The last one does an interesting mix between learning and enjoying, and if used properly used can produce remarkable campaigns (Cheng et al, 2009)[8]. The "Soul City" was a TV series aired between 1994 and 2014 in South Africa and it is a great example of how fiction can raise discussion on health and social issues, spreading a powerful message towards social mobilization.

However, at least in Portugal, I found out hard to get some training in this area. For Portuguese fellows I would recommend a quick view in a recently publish Index of Portuguese Social Marketing Authors, by Carlos Oliveira Santos and José Afonso Mazzon, re-edited in 2019. You can find many online courses and some useful manuals (like this ECDC's guidelines) but for more formal training I would recommend United Kingdom, Switzerland and Australia – just look for Griffith University and you'll be amazed with their investigations. While some evidence might be limited, surely is a promising field, that requires careful incorporation in public health intervention and proper evaluation[9].

But why aren't we exploring this field in depth? In the end, we want to improve populations' health and that will require behavior change strategies, as the ones used in social marketing. This is a huge challenge to the future, but we must find and talk with social marketeers, look for training in this area (why not an EuroNet meeting or EUPHA's workshop to kick off?) and seek more efficient ways to promote health in our communities.

Just keep in mind that social marketing is a powerful tool for effective public health intervention. This is the time to fight big companies that threat population's health with their own tools!

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Inhealthy Eating: Consequences and Costs

Sara Raposo
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The lifestyle of the populations has changed greatly over the centuries. This change was emphasised during the twentieth century with greater industrialization, urbanization, economic development and markets' globalization.[1]

This has led to changes in eating habits. There was an increased consumption of high energy foods with high concentrations of fat (particularly saturated fats) and unrefined carbohydrates (namely sugars).[1]

As a result, obesity and overweight have raised significantly. The World Health Organization (WHO) estimates that in 2005 over 300 million people were obese (BMI> 30) and there were more than 1 billion people overweight (BMI> 25) worldwide.[2]

Obesity and overweight are often associated with a series of events. The various studies available have shown that inadequate caloric intake leads to increased insulin resistance and elevated hormonal and inflammatory levels. The growth of peripheral fat induces a rise in blood pressure and a consequent change in vessel structure. Also, ingestion of saturated fat predisposes the deposition of Low Density Lipoproteins (LDL) and Very Low Density Lipoproteins (VLDL) in blood vessels. In this sequence, diseases such as Diabetes Mellitus type II, hypertension, cerebrovascular-cardiovascular conditions and certain types of neoplasms tend to increase.[2,3]

In 2010, it is estimated that 34.5 million deaths were due to noncommunicable diseases. Within this group the cardiovascular diseases represented the vast majority. According to WHO, 57% of worldwide cardiovascular diseases have at least one of the following risk factors: obesity/ overweight, high blood pressure, high cholesterol, hyperglycaemia, physical inactivity and low fruit/vegetable consumption.[2]



Fig.8 Food is health!

In 2013, 11.3 million deaths and 241.4 million

DALY's were directly associated to dietary risks.[4]

At a financial level, unhealthy eating habits are associated with a high economic burden. The annual health care costs of unhealthy diets ranged from €1.4 billion in

Australia to €4.5 billion in China and €8.5–9.5 billion in the United Kingdom. According to each population size, this shows that per capita annual economic costs are estimated to range from €143 to €156 for the United Kingdom, €63 for Australia and €3.5 for China.[5] Therefore, the lack of prevention shows high costs. It is more imperative than ever to prevent morbidity, mortality, loss of quality of life, loss of workforce and costs to the healthcare system.

To date, there is widespread agreement that intervention in the prevention should focus on several areas of action:

- at government level (broad-spectrum objective policies, intersectoral work, monitoring and evaluation);
- at institutional level (ensuring interaction between different agencies, provide tools for project design, apply international recommendations, help with monitoring and evaluation, ensure tools that safeguard conflict of interest);
- at funding level (support the establishment of information systems, evaluation studies, train professionals, empower decision-makers to develop effective policies);
- at research level (actively assisting the monitoring and evaluation of policies implemented to build evidence);
- at society level (involvement in civic movements with media outreach to the influence health policies, promotion of healthy habits and supervision of government, institutions and commercial operators' actions).[3]

The work of the various stakeholders should produce specific activities ranging from the regulation and standardization of labels, the availability of healthy food in public places and the use of economic incentives to promote healthier choices, including restrictions on advertising and the implementation of incentives for retailers and traders to make healthier food available.[3]

The value of public health measures is undeniable. However, the decision-makers often seem unaware of this fact.[6] Many authors argue that it is increasingly necessary to calculate the financial return on interventions to stimulate the allocation of larger funds to disease prevention and health promotion.[7]

Although intervention in public health is complex and often difficult to measure, it is necessary to construct indicators that allow the most accurate calculation possible.6 In this context, taking into account existing data, the American Public Health Association (APHA), estimated the return on investment (ROI) of interventions in various areas. Regarding food and nutrition, it predicted a 1000% return on the investment made in each preventive action.[7,8] Thus, it proves the relevance of Public Health interventions, showing that they are cost-effective.

In a world where obesity and overweight are increasing alongside with non communicable

diseases and consequent healthcare costs, the interventions to prevent these problems are extremely important. It is now the responsibility of the new generation of Public Health Specialists to improve the work that has been done so far, thru the creation of new strategies that allow a clear improvement of the healthy eating habits and consequently the population's health.

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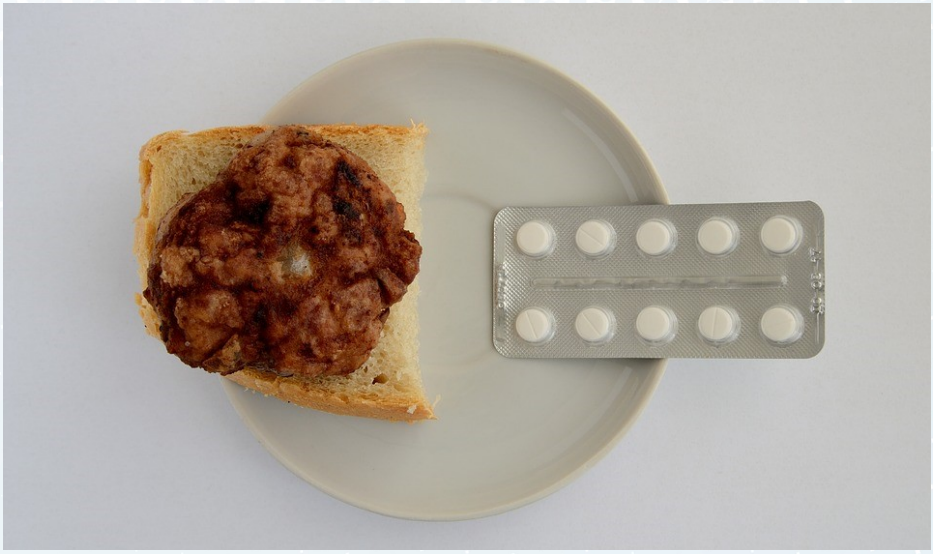


Fig.9 In 2010, it is estimated that 34.5 million deaths were due to noncommunicable diseases.

Foodborne diseases: a case study

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Despite the magnitude, transcendency and vulnerability of foodborne diseases, they still are a Public Health challenge. According to the World Health Organization (WHO), Europe is the region where the economic burden of foodborne diseases is the lowest. Nevertheless, every year in European Union (EU) there are more than 320 000 cases of notifiable zoonotic diseases in humans[1,2]. Today in Portugal we use SINAVE (National Epidemiological Surveillance System) and foodborne diseases are included in the notifiable diseases[3]. The knowledge of the etiology of foodborne diseases and the number of cases, Hospital submissions and deaths are fundamental information to establish priorities and strategies of surveillance, prevention and control[1]. According to the Portuguese law, a "group foodborne disease" or "outbreak" is any situation of foodborne disease affecting two or more individuals and having a common origin. The exception is a single case of botulism or chemical poisoning, which is already an outbreak[3].

This is a study of an outbreak of acute gastroenteritis, describing the approach and intervention that were done.

Methods

The outbreak of acute gastroenteritis occurred at a group lunch at a restaurant in Pombal (Portugal). The Health Authority was informed by the Emergency Department that there was a big number of acute gastroenteritis cases, from the previously referred lunch.

The epidemiological investigation began, following the procedures of the Portuguese law: the restaurant was seen, including the kitchen, and the food and water samples were collected.

The survey was conducted to the 32 individuals that went to the Hospital, where no one was submitted. Despite asking by the phone to collect biological samples, that wasn't done, probably because of the management of the Emergency Department. We tried to contact the group organization in order to conduct the survey to the exposed, but it was impossible.

Results

32 individuals went to the Emergency Department with an acute gastroenteritis, only with nausea and vomiting, so a Hospital submission was not necessary.

In collective foodborne diseases a case is an individual with symptoms such as fever, colic, nausea, vomiting, diarrhea and/or headache and that ate the suspect foods.

The exposed (group) are the individuals that ate the suspect foods.

The age of the cases was between 7 and 77 years old, including 8 men and 24 women, with symptoms in both sexes and all ages.

The incubation period was between 3 and 7 hours (Figure 10).

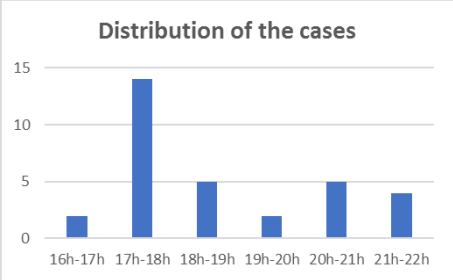


Figure 10: Epidemic curve

As it wasn't possible to conduct the survey to the exposed, we couldn't calculate the attack nor the relative risk rates.

The human consumption water had coliform bacteria and all the foods were contaminated (coliform bacteria, E Coli and Listeria), except the pudding. It wasn't possible to identify the pathogenic agent, because even though it was asked by the phone, the collecting of biological samples wasn't done, probably because the symptoms were scarce and time bound. The laboratory analysis that were done during this investigation weren't concluding, as all the results were abnormal, except for the pudding.

Conclusions

With this investigation, several difficulties and possible solutions were identified. We recommend a bigger awareness of the population for these problems, especially the health professionals, so that the communication can be as fast as possible.

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Pertussis: Ethiopathogeny and Risk Factors

Sara Raposo
Public Health Resident at the Public Health Unit of Oeiras and Western Lisbon, Portugal.

Whooping cough or pertussis is the most frequent vaccine-preventable disease in the world.1 It is a potentially serious respiratory tract disease with a major impact on infant morbidity and mortality.[2] According to estimates, in 2014, have occurred more than 24 million cases worldwide in children under 5 years of age, associated with 160 000 deaths.[3]

It is caused mainly by gram-negative coccobacillus Bordetella pertussis. Humans are the only host of the bacterium and are therefore responsible for its transmission by close contact through respiratory droplets during the catarrhal phase and the first 3 weeks of the paroxysmal phase. [2,4,5,6,7]

The disease is characterized by an acute presentation with an incubation period of 7 to 10 days.[2,8] The clinical course is distinguished in 3 phases: catarrhal (1 to 2 weeks), paroxysmal (2 to 6 weeks) and convalescence (2 to 6 weeks). The first phase presents with upper respiratory tract symptoms, resembling a flu-like syndrome. The paroxysmal phase is characterized by progressive episodes of coughing, which may culminate in inspiratory squealing and vomiting. Classically, paroxysms progressively improve over the following 6 weeks, but the convalescent phase may last for several months with recurrent episodes of cough triggered by viral respiratory infections.2

Whooping cough affects mostly infants. According to the Centers for Diseases Control and Prevention (CDC), approximately 57% of children under the age of one who develop pertussis are hospitalized for complications of the disease, usually during the paroxysmal phase.16 In infants younger than 6 months of age without priming vaccination completed or even initiated, the most frequent complications are apnea (61%), pneumonia (23%), seizures (1,1%) and encephalopathy (0.3%). In adults the most common complications are weight loss (33%), urinary incontinence (28%), syncope (6%), rib fractures from severe coughing (4%), and pneumonia (2%).[9]

Early detection and treatment are very important. Macrolides are first-line antibiotics, being azithromycin commonly used. In the case of macrolide intolerance or erythromycin resistance, trimethoprimsulfamethoxazole is the recommended antibiotic.[9]

After vaccines became widely available in the 1950s, there was a steep decline in the number of pertussis cases and deaths in children.10 Nevertheless, the number of cases started to rise in the last two decades in several countries, particularly in children

who do not have initiated or completed priming vaccination.

Until 2 months of age the newborn's immune system is not mature enough to respond to vaccination and until completing priming vaccination it doesn't generate enough immune response against Bordetella Pertussis. Therefore, age represents an important risk factor for the disease.[11,12]

Because it is an infectious disease transmitted by direct person-to-person contact, intimate or close contact is an important source of infection. In the case of children without prior immunity, family members, particularly older siblings and parents (particularly the mother) are the most likely source of infection.[7,13]

An investigation of hospitalizations due to pertussis in the central region of Portugal, between 2004 and 2009, found that most cases (70.6%) had a history of home contact with adolescents and / or adults with a cough clinic.[9,14]

Molecular typing of Bordetella pertussis in children and their close contacts has confirmed that identical strains can cause symptomatic disease in children and asymptomatic infection in adults and adolescents.[9,15] More recent studies have highlighted older siblings as an important source of infection.[16,17]

In addition to family contacts, at least theoretically, it is possible to identify other factors that may influence the risk of infection such as the characteristics of the child and of the mother.



Figure 11: After vaccines became widely available in the 1950s, there was a steep decline in the number of pertussis cases and deaths in children

Gestational age is important since the development of the newborn's immune system and the exposure to maternal antibodies are proportional to the number of weeks of gestation. Thus, premature newborns are at increased risk for infections, including respiratory infections (namely pertussis).[18]

Although it hasn't been demonstrated any statistically significant difference, several publications point to a higher incidence of the disease in females rather than males.[7,8]

Birth weight is also indicated by the

literature as a potential risk factor for the incidence of pertussis as it is often related to premature births.

Another generally considered risk factor is the existence of maternal smoking habits. Smoking is often associated with increased child morbidity and the occurrence of a range of diseases, including acute respiratory diseases. Several publications indicate that the epithelium of smokers is more susceptible to colonization by respiratory syncytial virus, which in turn facilitates infection by other agents, notably Bordetella Pertussis. Although not all studies have found a positive association between maternal smoking and the incidence of pertussis in children, some point to this.[19,20,21]

The literature also indicates mother's education may influence the risk of disease. Babies born to more educated mothers have better care (hygiene, food and education).[22,23] It should also be considered that educational level may influence the maternal age. The maternal age may also be important, once antibodies (either from vaccination or natural infection) disappear overtime.

Parents nationality can also play an important role, either because of the different health behaviours adjacent to each country's culture or because of inequalities in access to health and education depending on the country of origin, which can also interfere with the level of health literacy.

Once pertussis cases have been rising in some countries, it is important to review its' ethiopathogeny and it's risk factors. Alongside with maternal vaccination during pregnancy (that is being implemented in several European countries), this knowledge may help to control it once again.

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Implementation of healthcare services in hard-to-reach rural areas

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"Una strada di terra che inizia ai confini del niente / e il mio tutto che ancora si ostina a cercare una via / i pensieri che più della sabbia mi bruciano gli occhi / questi occhi che ancora ringraziano di essere qui" Sedici modi di dire verde - Niccolò Fabi

The non-governmental organization Doctors with Africa CUAMM[1], offers to students interested in global health and international health cooperation the opportunity to carry out 6 months of training in one of the African countries where it operates. It's thanks to this opportunity that we found ourselves in Chiulo, a rural village in the Comuna of Mucope (88000 inhabitants) in the south of Angola, in the Ombadja District (350000 inhabitants) of Cunene province.

After the end of the civil war in 2002, Angola faced a sustained economic growth until 2014, when a prolonged reduction in oil prices led to an economic crisis, followed by a growing inflation and a reduction of public expenditure in social and health sectors, which had a great impact on the most vulnerable population[2].

Since 2004, CUAMM's focus in Angola has been on health system strengthening, with a specific attention on maternal and child health. In Angola, maternal mortality is 241 per 100000 live births and children under-five mortality is81 per 1000 live births (3).

In 2018, CUAMM started a three-year multifaceted project aimed to improve



Figure 12: Outreach immunization session

maternal and child health in the Ombadja District, built around the collaboration between the District Health Department of Ombadja and the Hospital of Chiulo.

Among the different activities that are part of the project, we had the opportunity to work with Chiulo Hospital's Public Health department responsible to carry out routine immunization. Immunization represents one of the most important tools to contain global mortality, and it has been estimated that childhood vaccination for 10 diseases in 41 of the poorest countries could prevent 36 million deaths between 2016 and 2030[4]. At Chiulo Hospital, routine immunization services are performed by the Public Health Staff (PHS), formed by 5 skilled nurses. Immunization sessions are carried out both in the hospital's outpatient clinic (fixed point) from Monday to Friday, and in the territory of Mucope through outreach sessions twice a week in order to reach 8 different villages monthly (from 6 to 70 km). Chiulo Hospital is a zonal referral hospital with a network of 41 peripheral health facilities (health centers and health posts). The District Health Department of Ombadja, located in Xangongo, a town around 30 km from Chiulo, provides the necessary equipment for all the vaccination points in the District.

The immunization point of Chiulo Hospital is the only one carrying out outreach sessions in the Mucope territory thanks to the availability of a vehicle and of an adequate number of staff to carry out both outreach and fixed sessions at the same time. The outreach sessions are complemented by other health interventions, such as deworming, vitamin A supplementation, screening for acute malnutrition, and antenatal care. Community Health Workers (CHWs) and Traditional Birth Attendants (TBAs) also take part to this activity mobilizing people and carrying out brief educational talks on mother and child health-related issues (e.g. nutrition, healthy pregnancy...) fostering community empowerment.

The project activities are focused on the one hand on enhancing continuous training of the PHS (in particular related to data collection) and on the other hand, on strengthening the collaborations with local CHWs and TBAs to promote community empowerment and shared decision-making between the community and the health services. Given that most of the Mucope territory is not reached by phone or internet connection, and that locals speak different languages as Portuguese is often a second language learned at school, collaborating with CHWs and TBAs has been essential to strengthen the connection with community leaders of Mucope villages, mobilize people and share information on immunization and other health-related topics.

Since the Alma-Ata Declaration[5], Primary Health Care represents a vision that aims to provide health and well-being with equitable distribution according to people's

preferences and needs. To achieve this vision in the 21st century, WHO highlights the need of transformative actions in healthcare policies, recommending among other actions the definition of a new role of hospitals in order to end the dichotomy between these structures and the first levels of care ensured outside them, moving towards a people-centred approach involving local communities in the management of healthcare[6].

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