

COORDINATION OF “PEST CONTROL” ACTIVITIES (UNI EN 16636: 2015) FOR HEALTHCARE STRUCTURES

*The Experience Of A.S.L. Naples 1 Center At The Covid-19
Vaccination Center “La Fagianeria” Of Capodimonte (Na)*

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■ **KEYWORDS:** Pest Management, environmental and workplace prevention, Ordine TSRM PSTRP

ABSTRACT

2020 has been a year marked by a terrible pandemic, caused by a Coronavirus named Covid-19. This virus will go down in history for radically changing the world population's life habits and leading death, suffering and terrible moments among countless family, in addition to severe economic and financial damages. In just over a year and despite all the restrictive containment measures implemented by the the world countries' governments, the pandemic itself has caused over 163 million cases and 3 million global deaths, of which over 53 million cases and 1 million deaths in Europe, while in Italy there have been over 4 million cases and 123.000 deaths. The only way to stop pandemic is to be able to produce and test, as soon as possible, an effective vaccine to be given to the whole global population. Finally, in early 2021, the European Medicines Agency (E.M.A.) and subsequently the Italian medicines agency (IMA) approved to use various anti covid-19 vaccines produced by some pharmaceutical companies. In this context, the ASL NAPOLI 1 centro strategic direction, in compliance with state and regional provisions, promptly took action through the creation of numerous vaccination hubs with a dosing total capacity of 15.000-18.000 doses of vaccine per day, distributed throughout the area of competence. In particular, the vaccine centre set up in the rooms called “La fagianeria” located in the “real bosco di Capodimonte”, a luxuriant park with various botanical wonders that covers about 134 hectares with over 400 different plant species. Just due to the location peculiarity, it was necessary to implement a pest control procedure according to the “UNI EN 16636:2015” standard, for infestations control and damages verification that pests can cause to the environment, to people's health and goods. The presence of endemic pests such as small rodents, crawling and winged insects or micro-organisms can represent, in fact, a serious risk for users health and health personnel since they can act as “vectors” for the introduction and the spreading of diseases and possible allergens for humans. Pest management, therefore, plays an important role in protecting public health and also in protecting health facilities from direct and indirect damages that can cause significant losses both in financial terms and in service quality offered to users. The study aim is to coordinate the “pest control” procedures implementation, verification and validation according to “UNI EN 16636:2015” at the vaccination center set up by ASL Napoli 1 centre in rooms called “la fagianeria” located inside the real bosco di Capodimonte, verifying their efficiency and effectiveness. The evolution of health care organisations towards socio-assistance intervention system characterised by a certain operational complexity, also through the multi-professional participation of various operators, has entailed the need to pay more attention to pay more attention to pest control activities to citizen users some quality healthcare services as a response to its ever-growing and more complex health demand, due to the progressive population ageing, which makes even more necessary a multitude of professional interventions, increasingly integrated, to ensure a complete and satisfying response. I would like to thank my company for giving me the chance to carry out this great professional experience that brought a cultural, behavioural and professional change in me. thanks also to the proactive attitude of the company strategic management which, in SARS-COV-2 pandemic emergency, has been able to integrate the work of various specialists among health health personnel, including “environmental and workplace prevention technician” and “ specialist in prevention health professions sciences”.

INTRODUCTION

2020 was a year marked by a terrible pandemic, caused by a Coronavirus called COVID-19, which will remain in history for having radically changed the Italian's life habits and world population and for having brought death, suffering and terrible times in so many families, as well as unprecedented serious economic and financial damage.

In just over a year and despite all the restrictive containment measures put in place by the governments of the world countries, the pandemic itself has caused

over 163 million cases and 3 million deaths globally, of which over 53 million cases and 1 million deaths in Europe, while in Italy there were over 4 million cases and 123 thousand deaths¹.

The World Health Organization (WHO), in fact, on 30 January 2020 declared a state of “Public Health Emergency” of global importance following the isolation of this new pathogen identified in Wuhan, China, at the end of 2019, a new coronavirus called COVID-19, responsible for the disease defined SARS-Cov2 (Severe Acute Respiratory Syndrome Coronavirus 2).

The only way to stop the pandemic is to be able to produce and test, in the shortest possible time, an effective vaccine to be administered to the entire world population. Finally in early 2021, the European Medicines Agency (EMA) and subsequently the Italian Medicines Agency (AIFA) approved the use of various anti Covid-19 vaccines produced by some pharmaceutical companies.

In this context, the Strategic Direction of the A.S.L. Naples 1 Center, in compliance with state and regional provisions, It is promptly activated through the construction of numerous Hub vaccines with a total capacity of 15,000 - 18,000 doses of vaccine / day, distributed throughout the territory of responsibility.

In particular, the vaccination center set up in the premises called “the Fagianeria” allocated within the Real Bosco di Capodimonte, a lush park with various botanical wonders that extends for about 134 hectares with over 400 different plant species.

The realization of the vaccination center was possible thanks to the collaboration of third parties who made the structures available and to the commitment and professionalism of the technical area of the Company Strategic Management which, with modest economic resources and little time available, guaranteed to users, high standards of hygiene, health and organization, combining exceptional architectural and technological choices.

Once the administration is complete, the vaccinated citizens can stay for the observation period in a room set up with reproductions of the main art masterpieces in the Museum, from Titian to Parmigianino.

A story in images of the Kingdom of Naples protagonists: from Charles of Bourbon on horseback to Ferdinand IV on horseback together with the court at Capodimonte.

Therefore, the opportunity for vaccination will also be an opportunity to immerse yourself in the wonders of art and nature.

Precisely due to the peculiarity of the location it was necessary to implement a Pest Control procedure according to the UNI EN 16636: 2015 standard for the control of infestations and for the verification of the damage that infesting agents can cause to the environment, to people’s health, and goods.

The presence of endemic pests such as small rodents, crawling insects and winged or micro-organisms can, in fact, pose a serious risk to the health of users and health professionals since they can act as “vectors” for the introduction and spread of diseases and possible allergens to humans.

Pest Management therefore plays an important role in

protecting public health and also in protecting health facilities from direct and indirect damage that can cause significant losses both in financial terms and in the quality of the service offered to users.

The aim of the study is to coordinate the implementation, verification and validation of procedures of “Pest Control” according to the standard UNI EN 16636:2015 at the vaccination center set up by A.S.L. Napoli 1 Centro in the premises called “Fagianeria” allocated within the Real Bosco di Capodimonte.

To this end, subject to the authorization of the Directorate General², it has been decided to carry out the curricular internship at the Basic Health District 29 and in particular at the aforementioned Vaccinal Center, dealing, in collaboration with the Company Tutor, with the coordination of the implementation operations of the Pest Control procedures for this structure, verifying their efficiency and effectiveness.

UNI-EN 16636:2015.

The regulatory evolution due to the application of the “Biocides” Regulation and the new provisions on pest control, together with greater public awareness, have contributed to the maturation of a new development. In fact, from a simple service of killing animals and infesting microorganisms, techniques of disinfection have evolved into real “Pest Management” techniques.

The new standard UNI EN 16636:2015 “Pest management and control services. Requirements and skills”, sets the standard of reference that companies and professionals in the sector must adopt to be recognized by the client both private and public within the European Union. The regulatory evolution inherent in the hygiene and healthiness of food products had reserved a marginal role for Pest Control activities, describing them with generic and often incomplete terms. The lack of clarity of the information highlights a clear difference between the richness of detail devoted to the aspects of general productivity and hygiene in cleaning operations and the lack of information, reserved to the section relevant to the exterminator. This has led operators in the sector to consider pest management as the least important part of the selfcontrol program, “buying” the service at the most advantageous price rather than based on the quality offered³. A concrete revolution towards the realization of a service that has a higher quality is outlined with the adoption of voluntary standards of product certification, including the standard BRC (British Retail Consortium) and IFS (International Featured Standard).

TAB.1 I DIECI REQUISITI CHE, NEL MONDO, HANNO TOTALIZZATO PIU' CARENZE NELLE VERIFICHE BRC E IFS		
2	HACCP	9%
4.4	STRUTTURE	7,2%
4.14	CONTROLLO INFESTANTI	4,9%
4.11	PULIZIA E IGIENE	4,8%
1	IMPEGNO DELLA DIREZIONE	4,1%
4.7	MANUTENZIONE	4%
4.8	STRUTTURE PER IL PESONALE	3,5%
3.4	AUDIT INTERNI	2,9%
4.9.3	VETRO, PLASTICA E ALTRI MATERIALI FRAGILI	2,9%
3.9	TRACCIABILITA'	2,8%

Fonte: BRC – 113 nazioni, 16.000 siti, 18 categorie di prodotto

Tab. 1

LE CARENZE PIU' FREQUENTI IN AUDIT per il PEST CONTROL	
TAB.2	Presenza di infestanti/tracce al momento dell'audit
	Rapporti di monitoraggio incompleti
	Planimetria non aggiornata
	Contenitori rotti e non al loro posto
	Dispositivi elettrici non funzionanti oppure con bulbo in vetro non protetto
	Limiti di accettabilità non basati sulla valutazione del rischio
	Relazione dell'esperto trimestrale / annuale carente o assente
	Dispositivi elettrici posizionati troppo in alto
	Non contemplato il monitoraggio infestanti delle derrate
	GESTIONE INFESTANTI

Tab. 2

One of the requirements that has detected the largest non-conformities worldwide in BRC and IFS audits is precisely the one related to the Pest management service.

The adoption of the UNIEN16636:2015 standard is today one of the most suitable tools for achieving compliance with these requirements.

Table 1 lists the 10 requirements that have the most deficiencies in BRC and IFS checks worldwide.

The most interesting aspect is the emergence of organizations, such as health care and large-scale food distribution, which make Pest control a fundamental requirement for obtaining quality certifications.

Table.2 highlights the most frequent deficiencies in Pest Control audits, highlighting management, analysis, reporting and specific training problems.

In the face of this need for professional growth, aimed at giving greater guarantees for the quality of Pest Control services, the European standard UNI EN 16636:2015 has been developed which sets out the necessary requirements for the management and control of infestations as well as the skills to be possessed by specialized professionals in the field for the protection of public health, goods and the environment. In the face of this need for professional growth, aimed at giving greater guarantees for the quality of Pest Control services, the European standard UNI EN 16636: 2015 has been developed which sets out the necessary requirements for the management and control of infestations as well as the skills to be possessed by specialized professionals in the field for the protection of public health, goods and the environment. The evolution of health organizations towards social welfare intervention systems characterized by a certain operational complexity, also through the multi-professional participation of the different operators, resulted in the need to pay more attention to the activities of Pest Control to assure the citizen user of high-quality health services as a response to his growing and more complex health demand, in view of the progressive ageing of the population, which increasingly requires a multiplicity of professional interventions, increasingly integrated, to ensure a complete and satisfactory response⁴

Therefore, the specific requirements for the execution of a “Pest control” program to be applied to health facilities have been seriously taken into account, requiring a high standard of quality of service from health professionals.

It is a standard applicable by companies and professionals in the field dealing with pest management, which include the management and control of infestations, but also the assessment of related issues in order to provide *remedial actions* and recommendations useful for the final resolution and prevention of the problem.

The standard does not apply to crop protection, ordinary cleaning and disinfection associated with regular service contracts for cleaning.

UNI EN 16636:2015 Standard Key Point

The norm takes into consideration all aspects and all phases of service provision starting from the first in-

spection at the site to be subjected to Pest Control, passing through the design of the service delivery method, the actual pest management activity (disinfestation, rodent control, disinfection.), arriving at the evaluation of the effectiveness of the interventions and, if necessary, to a new service design.

The standard encourages companies and professionals specialized in the sector to provide not only control services but also prevention and monitoring of infestations, through the provision of recommendations and the implementation of an infestation management system ensuring traceability of the operations carried out. In Italy, a real official training course is not available for the figure of the “Professional exterminator”, although the Community provisions on Biocidal Products already refer to the so-called Trained Professional (qualified professional) and although training courses organized by the sector association (ANID) and other entities.

The Advantages Of The Standard

The standard makes it possible to offer a qualified and certified service. Companies in the food sector (especially those certified BRC, GFSF and IFS) are very sensitive to these issues. As a European standard, UNI EN 16636 defines criteria that are recognized throughout Europe and this helps to qualify professional services of Pest Management, describing the approaches that are in line with EU regulations. A strong point of UNI EN 16636 is certainly the one that ensures the user of the service the execution of an operational flow accompanied by a series of measures that guarantee the use of competent human resources able to apply their knowledge in order to release corrective actions, recommendations and management proposals to define best operational practices.

These measures are aimed above all at minimizing the impact and risks associated with the specific environment and the immediate surrounding which, in this case-study, consists of a luxuriant park that extends for about 134 hectares with over 400 different plant species.

Flow Chat Services

After the first contact with the user of the service (*phase 1*), the inspection of the structure (*phase 2*) is carried out, during which the type and level of potential infestations (*phase 3*) and the risks for the users and the surrounding environment (*phase 4*) must be evaluated and shared with the user itself. All this does not exclude the assessment of the regulatory context (*phase 5*) necessary to define the intervention plan (*phase 6*) which is finalized with a formal technical proposal (*phase 7*), of which the standard indicates the essential elements that must be contained therein. We then move on to the operational phase of providing the Pest Control service (*phase 8*); in particular, the rules for waste management must be observed (*phase 9*). At the end of each intervention, a Report must always be drawn up with the essential recommendations and post-intervention specifications (*phase 10*) and effectiveness checks must be carried out (*phase 11*), whether it is a single intervention, or whether it is a periodic monitoring (*phase 12*). All process steps are standard requirements and must therefore be documented and recorded in the Pest Control Register (See flow chat – Figure 1).

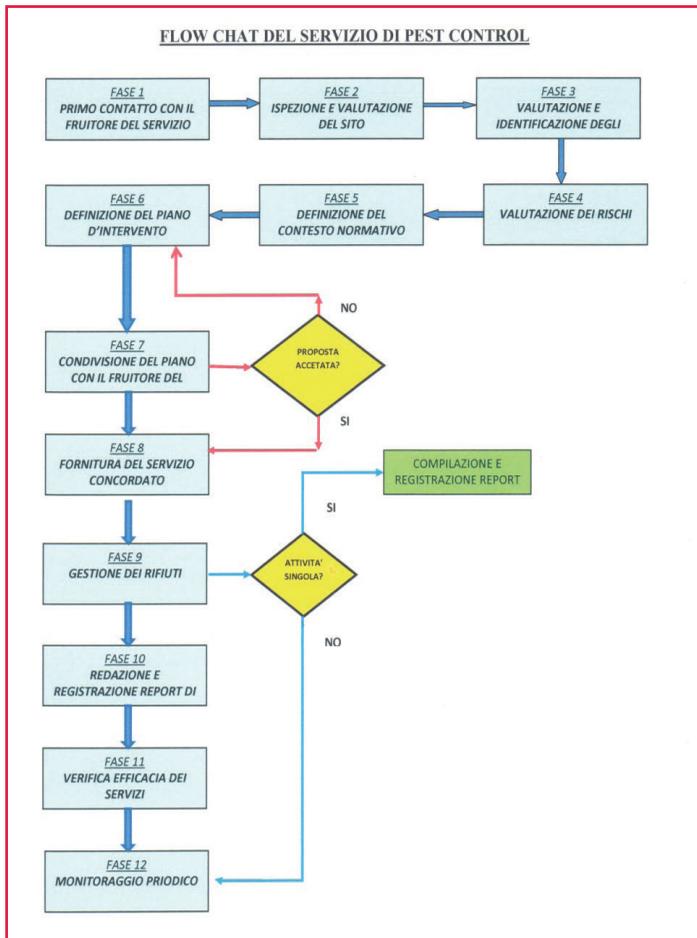


Fig. 1

The Role Of The Health-Care Professions Coordinator In The Implementation Of Pest Control Procedures

Now when the pest management plan and its proposal are accepted, we move to the realization of the service, in which the role of the Coordinator of Health Professions, hereinafter defined as Technical Coordinator (RTC), responsible for the implementation of the Pest Control Plan, takes on a fundamental role. In the face of any intervention, whether it “programmed” or “extraordinary”, the RTC must be concerned to consult the specific requests expressed by the user of the service and the problems identified on the site to be submitted to Pest Control, identifying the most suitable team to entrust the task to and defining the most suitable methods and products to achieve the service effectively in respect of the environment and non-target species. In essence, the RTC is entrusted with the task of communicating the following information to the Team:

- Service requirements agreed with the user;
- risks present at the workplace;
- Precautions to be observed (both technical prescriptions in the use of products, and legislative prescriptions in the various phases of the work);
- How to use products, machinery, equipment, labels and safety data sheets.

That time shall be preceded, where appropriate, by the supply of material and the making available of specific means, resources and training.

Along the lines of the well-known ISO 9001 and ISO 14001, a list of documents for the registration of the

services conducted and the analyzes carried out to evaluate their effectiveness are also added to create in the most suitable way, as well as any possible actions to be taken to ensure the maintenance of free pests environment.

Waste Management

All waste produced by Pest Control activities must be managed and disposed of in compliance with current legislation, in a safe way and in order to avoid negative impacts on the environment, on people and on non-target species⁵. For the purpose of the standard, particular consideration shall be given to waste generated by the service activity, including animal carcasses, bird droppings, materials and equipment which require disposal.

All administrative requirements relating to waste management produced and its storage (suitable and well-marked containers) must be ensured, including the filing of the planned permits (such as those of the managers of the Specialized Companies to which the waste is entrusted for transport and subsequent disposal) and the compilation of the records of waste loading and unloading and documentation required by the laws in force. 1.7)

Management And Sustainable Use Of PMC / Biocides

The standard encourages the setting of pest management services according to the principles of Integrated Pest Management.

In this context, the selection of chemical infestation control should not be considered as a primary management choice, but should be applied where habitat management and biological and physical control systems are not adequate and/or sufficient. The use of Medical Surgical Devices and / or Biocides represents a substantial part of the tools in use during pest control, rodent control and disinfection activities and in this regard the UNI EN 16636 standard states that all the mandatory requirements relating to their use are met. Of absolute interest is the need for “licenses” and authorizations for the purchase and use of PMC / Biocides, but to date no legislation has yet been established by the Legislator. It is necessary to set up a suitable storage warehouse in accordance with the legal provisions, with the correct transport and handling practices⁶. It is also necessary to demonstrate that the selection of pesticides has been carried out in accordance with the criteria of efficacy, efficiency, environmental impact and on human and animal health. Specialized companies and professionals in the sector are thus encouraged to equip themselves with tools that take into account aspects related to the impact on non-target animals, phytotoxicity (if applicable) and destinations of use (e.g. *areas with ornamental greenery, sanitary facilities, etc.*). The use of pesticides as reported in the ministerial labels is a mandatory requirement that must always be met.

Experience and training of human resources

One of the basic cornerstones for the success of Pest Control is represented by human resources intended not only as a workforce but also as an interface with the user of the service. Human resources are defined as all members of the organizational structure whose

activity influences, directly or indirectly, the quality of the services provided. The achievable results are decisively influenced by the skills and professionalism of the staff, as well as by the level of constant updating of the same, both in the context of the tasks entrusted and in the context of quality-of-service criteria. The user of the service must implement strategies for the enhancement of human resources aimed at professional growth, the strengthening of motivation, the dissemination of the value of participation, group work and quality culture as a mission to satisfy their needs. For this reason, fundamental importance must be given to the selection, training and updating of the staff involved in pest control companies⁷. The staff must be specialized according to the activities they have to carry out. After a careful initial selection, specific training must be provided, which confers theoretical and practical knowledge on the operating procedures to be applied. Subsequently, the staff must be constantly updated with specific courses. The training and update program must be planned by the user of the service in collaboration with the RTC and minutes and certificates of actual training, signed by the participants, must be recorded and kept. Appendix A of the UNI EN 16636 standard contains an exhaustive list of all the skills required at the different levels of the organization chart.

Staff Assessment

Periodically, the RTC must carry out an assessment of the personnel to verify the degree of training and the level of collaboration in the Pest Control activities.

The RTC will use a combination of training records, on-site visits and personal observations for the assessment.

The aim is to create the conditions for increasing the efficiency, effectiveness and productivity of services in order to provide quality performance.

The evaluation criteria and methodology shall be brought to the attention of the Team to which a summary of the evaluation and the results obtained shall be provided. Particular attention should be paid to the activities related to the provision of services through an assessment of the results obtained in relation to the quality objectives and in reference to the application of operational processes through the outcome of internal audits, constructive participation in the improvement of activities.

Cepa Certified

In order to create a management system recognized and accessible to all pest control operators, the European Confederation of the Pest Control Industry (CEPA) and its associates have played a decisive role in the development of the UNI EN 16636 standard. In particular, CEPA wanted to develop a specific protocol (the CEPA Certified) focused on verification methods.

The certification with the CEPA protocol provides a competitive advantage for pest management operators as it demonstrates the professionalism of companies and gives value to the service provided to customers in any sector⁸.

Scope Of Application

The Pest Control procedure ensures the management and control of animals and pests (insects, rodents, etc.), in all places of the vaccine hub set up by the

A.S.L. Naples 1 Center on the occasion of the emergency Pandemic due to COVID-19, in the premises called “la Fagianeria” allocated within the Real Bosco di Capodimonte, in order to keep “under control” the danger of animals and pests reducing the conditions that may favor its colonization.

Furthermore, it has the purpose of formalizing and demonstrating the prevention, monitoring and control activities, implemented by the Presidential Health Department (DSP), in order to “manage” the danger of pests (Pest Management). The procedure is addressed to health, technical, administrative and organizational personnel who, in several respects, manages the vaccination center for the prevention, exclusion, monitoring and fight against pests.

In particular, the procedure shall apply to:

1. To the external areas of the Vaccination Centre;
2. To the access areas of facilities dedicated to the acceptance, anamnesis and administration of the vaccine to users;
3. To the service environments, departments and equipment;
4. To storage facilities.

Responsibility

In the vaccine center is formally identified a logistics manager (RL) and a healthcare coordinator (RS) the Logistic Referent must be a member of the Presidial Technical Area while the Health Representative must be a Medical executive of the DSP.

The DSP identifies a figure who will be the Technical Coordinator (RTC) of the pest management. The names and contact details of the Vaccination Center must always be known and defined.

The role of the RTC, responsible for the pest management, is to ensure that Pest Control personnel at the Vaccine Center provide for:

- Keeping the external and internal areas of the Vaccine Center tidy and clean;
- Check that the incoming products are free of insects in the packaging, gnawed parts and / or traces of excrement;
- Regularly check the warehouse and areas of acceptance, anamnesis, administration of vaccines by observing and assessing the presence of direct or indirect traces of animal pests;
- Checking equipment, working surfaces, fixtures and floors, in particular the most hidden corners;
- Furthermore, the role of the RTC is to:
- Carry out the control operations of unwanted pests in accordance with what is indicated in this procedure;
- The Role of the Health Care representative is to:
- Collaborate with the RTC, in enforcing implementation of this procedure;
- Verify the implementation of the procedure and prescribe any actions to improve the effectiveness of pest control;
- Verify the management and resolution of any non-conformities highlighted during activities.

Operating Procedures

The operating modes are identified as:

1. Preventive and exclusion measures;
2. Active protection measures;
3. Monitoring and verification

Preventive And Exclusion Measures

In order to prevent favorable conditions to the development of an infestation, it is essential to adopt structural solutions, install architectural barriers and implement operational measures, such as to prevent, or in any case make as far as possible remote, the chance, that insects and rodents can colonize the external areas or enter the establishments and/ or premises inside the vaccine centre.

These requirements are expressed in the following points:

1. Measures implemented in external areas to ensure that pests are easily identifiable upon inspection and do not find favorable conditions for their colonization and / or multiplication;
2. Order and cleanliness in areas outside the vaccination center;
3. Periodic cut of spontaneous and ruderal vegetation;
4. Removal of any waste or disused material from the perimeter area (*pallets, boxes, etc.*), in this regard, it is useful to recall that piles of solid waste, scrap and various debris represent ideal hiding places for mice and rats, as well as uneven soils and covered with tall and uncultivated grass or untreated bushes;
5. Measures to prevent pest access to waste by keeping collection containers tightly closed, then emptying, cleaning and disinfecting them regularly;
6. Control and positioning of external lights to eliminate the attraction of insects to the entrance doors;
7. Creation of appropriate drainage for water, so that no water stagnation is created;
8. Continuous removal of any animal manure.
9. Install physical barriers to prevent, or to limit as far as possible, the introduction of pests:
10. Measures to keep doors and windows closed as close as possible, using automatic closing doors;
11. Provision of external doors with flaps made of a material resistant to possible erosion by rodents;
12. Installation, at all fenestrate openings, of fine mesh anti-intrusion nets to prevent the entry of flying insects;
13. Installation of robust grids, with fine mesh and anti-corrosion material, at the drainage wells, to avoid the entry of rodents from the sewage system. In any case, the floor drains must be properly siphoned;
14. Sealing of any gaps and crevices existing between the leaves and the floor that could allow the access of crawling insects and small rodents;
15. Closure of any existing hole or fissure at walls, structures, installations, hydraulic pipe terminals, exhaust pipes, inspection hatches and control panels not perfectly connected, ducts for the passage of cables in the vicinity of machinery, frames of fixtures;
16. Checking that the incoming goods do not show any signs of infestation, taking into account that packaging, especially of jute or paperboard, may be a vehicle for the spread of insects and small rodents;
17. Store the materials in an orderly manner, on shelves and/ or shelving easily cleaned, detached from the walls (*approximately 30 cm*), and raised from the ground (*approximately 20 cm*), so that

an easy and comprehensive inspection can be performed;

18. Keep waste collection containers closed, then empty, clean and disinfect them regularly;
19. Carefully clean, at the end of the daily work, floors, work surfaces and equipment by removing any organic residues that accumulate in cracks;
20. Periodic elimination of all types of cobweb.

Active Protective Measures

Active Protection Systems consist in the installation of traps and baits for insects and rodents, which can be placed, especially in well-studied points, both to catch or keep at a distance the animals pests and to keep under control the situation, finding traces of it, intervening before a real colonization takes place that can be difficult to manage.

The elimination of pests is carried out differently according to the type of animal pests:

- Rodents can be controlled by placing protected capture traps, inside the structures/facilities, or with rodenticide bait (*bait box*), only outside the storage and processing premises;
- Flying insects can be controlled with the aid of special lures / attractive electric traps or traps containing pheromones;
- Crawling insects can be controlled by placing glue traps inside the premises.

The traps are placed in the vicinity of dark and hidden areas, cracks, fissures, behind the shelves and near the toilets.

Food attractants are not toxic and their placement inside the traps makes contact with people impossible.

The traps thus arranged have the dual function of capturing insects when there is a limited infestation, and of promptly highlighting the strong infestations which are in their expansion phase.

The RTC must be quickly informed by staff throughout the Vaccination Center, of any sightings of live animals, carcasses, excrement or gnashing. The different locations must be numbered and possibly identified with a sign, and then reported on a floor plan of the facility.

For each of them, the type of bait, the active ingredient, the doses used are specified included the number of the nearest Poison Control center.

Baits and traps based on toxic chemicals shall be used only and exclusively in appropriate safety dispensers, properly secured or anchored so as to avoid direct contact of the product with the outside, avoiding any risk to the safety of food, personnel or children and “non-target” animals such as dogs, cats, birds, etc.

Each workstation shall be monitored at a useful and defined frequency. Any change to the allocation of baits shall be promptly reported to the floor plan ensuring that they are kept up to date. The floor plan shall, if possible, indicate the date of update with the signature of the responsible person.

Of all active substances and preparations used in the monitoring and control of animal pests, the labels, technical and safety data sheets will be kept by the RTC.

The biocides used must be stored in a special lockable cabinet, placed inside the facility, by the RTC. From time to time, the same biocides are brought to the site by the person responsible for the company’s urban remediation activity.

TABELLA DEI "LIMITI CRITICI"			
AGENTE INFESTANTE	AREE ESTERNE	AREE INTERNE	IN CASO DI SUPERAMENTO DEI LIMITI CRITICI
RODITORI	a) - 0 Avvistamenti b) - 0 catture roditori	a) < 2 Avvistamenti roditori/settimana b) = 0 presenza di tracce dirette e/o indirette (<i>feci, urine, rosicchiamenti</i>) c) < 3 esche asportate e/o rosicchiate/mese aree esterne d) = 1 esche asportate e/o rosicchiate/mese aree interne	INFESTAZIONE IN ATTO: a) gestione non conformità b) potenziamento piano di lotta all'infestante c) Aumento del numero di erogatori di esche d) sostituzione del principio attivo e dell'attrattivo
INSETTI STRISCIANTI	a) < 10 esemplari/mese per specie sulle trappole collanti	a) Assenza di infestazione massiva lungo li spazi perimetrali	INFESTAZIONE IN ATTO: a) gestione non conformità b) potenziamento piano di lotta all'infestante c) Applicazione procedura di pulizia e sanificazione dei locali d) eventuale intervento di disinfestazione abbattente
INSETTI VOLANTI	a) < 20 esemplari/mese per specie sulle trappole collanti	Non applicabile	INFESTAZIONE IN ATTO: a) gestione non conformità b) potenziamento piano di lotta all'infestante c) Applicazione procedura di pulizia e sanificazione dei locali d) eventuale intervento di disinfestazione abbattente

Tab. 3

Monitoring And Verification

The RTC shall, if possible every morning, during the pre-operational phase, verify the correct execution of the preventive measures (point 2.3.2), performing an accurate inspection of the external area, the internal environments and the equipment. The results of the verification must be recorded in the appropriate "Pest Control Register" by filling in the appropriate model "Monitoring report about preventive and exclusion measures".

If a non-conformity is found, the RTC must proceed with the filling of the template "Report of non-conformity" (Model 2) and then notify the Logistics Manager and the Health care Director of the Vaccination Center, in order to address, manage and possibly resolve the above non-conformity in the shortest time possible.

The Management Expert For Social And Healthcare Companies

Management is defined as "working with human, financial and physical resources to achieve organizational objectives by performing the planning, organizing, leading and controlling functions"⁹.

In the health sector, the concept of managerial culture was introduced in the 90's, and has allowed to profoundly transform the institutional, managerial and organizational structure of the health system by introducing, among other things, the concept of company.

Healthcare companies, in particular, have been affected by a series of dynamics, attributable to external environmental pressures (*institutional change, amendments to the regulatory framework, socio-economic dynamics, scientific progress and technological innovation*) which have had an important influence on the management and organizational features and have directed its processes of evolution.

The deep changes that have affected these companies, have imposed a redesign of the organizational structure of them, in all their significant components (*organizational structure, operating mechanisms and system of skills and values*).

All this has determined the need to reshape both the human contribution and the roles within the company structure: the simple physical contribution, from "providers of work", is replaced by the need to bring a cultural capacity, more qualified on the intellectual and professional side, as "intelligence providers", to allow an innovative and flexible business strategy.

Public health organizations, in particular hospitals, considered as services in which technical-health and economic procedures are carried out for the achievement of health protection purposes, present themselves as "companies" with very peculiar characteristics; in fact, within them there's complexity (*structural and organizational*) and a specificity (*linked to people and professionalism*) that have no comparison in other sectors of the industry.

In this context, the skills of individuals within organizations increasingly represent one of the main competitive factors, directly and decisively influencing company performance.

The link between individual skills and performance is particularly critical for highly specialized companies, which use highly specialized knowledge as inputs to their production or "supply" processes.

A "health" company is simultaneously a production system and a social institution where the entrepreneur (General Manager) has the responsibility to place his business in the environment that is most congenial according to the indications dictated by the National Health Plan and the laws imposed by the market.

Therefore, managers are required to undertake an articulated and complex commitment that includes not only efficiency, but above all the effectiveness of healthcare processes in terms of quality and therefore customer satisfaction.

We can specify that a healthcare company can be defined as such, if it has the availability and the ability to use adequate tools:

1. To Carry out analyses and forecasts.
2. Making decisions.
3. Translate the decisions taken into concrete action.
4. Take the necessary actions of supervision of the operational cycle and control of the results achieved, in terms of quantity, quality and cost of the product (effectiveness, efficiency and adequacy).

The listed characteristics represent the particularity of the social-health system as they are present all together at the same time or in large part; this co-presence makes the managers task of the health facilities more complicated.

The cultural foreclosure of medical staff to corporate logic and their supreme loyalty to specializations and professional companies to which they belong makes systemic analysis of problems and cooperation between the various figures involved on the implementation of integrated management systems onerous.

In addition, there are barriers linked to health services, sometimes separated by conflicting interests and difficulties in communicating between interfaces.

The Role Of The Health Professions Manager/ Director

The manager / director carries out training, organizational and managerial functions, in fact, manages and organizes human resources in order to optimize health services and the ones of other kind in the best possible way.

He makes choices and decisions that directly affect the people and structures entrusted to him, highlighting his personality, aptitude and ability.

The aim of the manager is to allow the members of a group, more or less large, to work together in a harmonious way to achieve the institutional objectives, avoiding the dispersion of their efforts in different directions.

He is, in fact, the most suitable person to guide towards common goals the activity of all collaborators, such as physiotherapists, nurses and other professionals, for example doctors, because it has a deep knowledge and a close view of the activities of each employee, finding itself in a position to encourage their communication in view of corporate purposes.

Moreover, since he also knows people directly, he can make them interact to form a real working group, obtaining it by adopting an information and participation behavior.

The typical tools of this activity are therefore not orders, but face-to-face conversations, meetings and forms of written communication such as proposals to be discussed in groups, reports, guidelines, protocols, procedures and so on.

Therefore, it does not only envisage the concrete planning of the necessary interventions, but also a systematic way of acting characterized by operational flexibility and interchangeability of functions.

Today, compared to the past, standard operating procedures have become considerably complicated by the rapid evolution of regulations that must contain and reduce clinical risks and safety in the workplace.

Therefore, the manager in his role must rationalize and optimize resources taking into account the technologies used, the levels of performance required, the type of users and so on. The manager performs clinical-welfare, management, leadership or relational functions.

The clinical-care functions remain for the continuous interaction with all professional figures, he is the central focus of the motivation of the group in the field of assistance, using his own experience, the knowledge acquired and stimulates its operators to work at the highest level of quality.

The managerial functions are focused on the organization, to achieve the company objectives, sharing ideas, with the continuous interaction of people creating a stable and orderly working environment.

Managerial skills can be divided into:

1. Planning of daily activities for effective assistance;
2. Management and coordination of human, technical and economic resources for an efficient use of resources and proper administration of the operational unit;
3. Organization, evaluation and monitoring.

After the completion of the bureaucratic process and

obtaining the required authorizations, on 03/07/2021, the curricular internship period began at A.S.L. Naples 1 Center - Basic Healthcare District 29 (Macrostructure) - Covid Vaccine Center “La Fagianeria” within the Real Bosco di Capodimonte in Naples.

Pest management - analysis of places

The premises of the Health Facilities offer certain pests habitats protected from many adversities and niches with micro-climatic conditions suitable for the development and spread of the species.

Even in the Health Care Facilities, as well as in the canteens, kitchens and everything connected to the food supply chains, any foreign organism is considered as “pest” and its entry into the premises must be avoided as far as possible, including by the installation of physical anti-intrusion barriers.

In these structures, there are often optimal conditions for most of pests, which can settle in the places determining an increase of the biotic community and spreading contaminants of various kinds through the body and/or the excreta (vector animals).

There are numerous ways by which these pests can access the premises (*doors, windows, machinery, raw materials, pallets, material for discharged packaging, various conduits, etc.*) and there are just as many points in which they can proliferate.

The damage that pests can cause in health facilities are of two types:

1. **Direct**, due to damage to plants, structures and assets as well as the image of the Healthcare Facility;
2. **Indirect**, due to the release of polluting factors (feces, saliva, urine, parts of the body, etc.) and to a possible microbial contamination of surfaces, pharmaceutical equipment and packaging.

Consequently, pests can be vectors of human pathogens and negatively interfere with the health supply to users, as well as being an important cause of economic damage deriving from contamination, environmental damage, loss of image and legal disputes (legal expenses).

The pests that can be found in the premises of a Healthcare Facility are many and often do not even have a real “pest potential”, as they derive from accidental introductions or the lack of physical anti-intrusion barriers to the openings on the external areas. The actions of monitoring and indirect control of pests (*prevention activities*) must always be adopted, regardless of the healthcare facility treated.

In the food sector, pest management, that is to say, the adoption of monitoring and control measures (at least indirect), represents, in the context of self-monitoring based on the HACCP method, a GMP (*Good Manufacturing Practice*) which must cover the entire production complex and each working cycle.

Monitoring has the function of ascertaining the presence / absence of a specific pest and, therefore, has the function of measuring the effectiveness and efficiency of **indirect** control techniques, consisting of measures with environmental action aimed at making inaccessible or inhospitable a specific environment to pests, and **direct** measures that instead are targeted action measures towards the pest itself, regardless of the environment.

The regulatory indications in the food sector, concerning the requirements and control techniques for pests

defined by the EC Regulation 852/2004 and subsequent amendments and additions, which together with other standards make up the so-called “hygiene package”, are very generic, while significantly more stringent are the guidelines provided by the national and international voluntary reference standards (*ISO 22000, UNI 11381, BRC / BRC IoP and IFS*), which in any case leave ample room for the sensitivity and preparation of individual food sector operators (FBO) and of pest control workers (PCO).

Experience shows that, even within this complex regulatory framework, the execution of a truly effective pest control is still far from guaranteed.

This is partly due to the heterogeneity of flows and processes, but also to the complexity of health facilities and the erroneous risk assessment.

Pests

Pest control is an essential part in the management of health facilities and all premises and where there are canteen, refectory or kitchen of good food production and processing practices from a hygienic, economic and regulatory point of view.

These animals can cause physical and microbiological contamination of surfaces, equipment, medicines and packaging by excrement, hair and feathers, body parts and nesting materials.

In this risk review, verifying the site and the activities in place, it is specified that any pests are:

- 1. RODENTS:** rodents and rats; For the monitoring of these species, are present in the site, the external safety regulators, as reported on the plan shown in Figure 2 on page 39;
- 2. CRAWLING INSECTS:** cockroaches, beetles, ants; For the monitoring of these species are present in the site, the glue traps for crawling insects in the interior areas, as reported on the floor plan shown in Figure 2 on page 39;
- 3. FLYING INSECTS:** flies and midges; For the monitoring of these species are present in the site, UV lamps with glue boards in critical areas. UV lamps also attract foodstuffs insects, as shown on the floor plan shown in Figure 2 on page 39;
- 4. BIRDS:** pigeons, etc.; For pigeons there are no monitoring systems and/ or traps, but during scheduled monitoring and quarterly checks, visual checks on the upper parts, visual checks of the presence of excrement, feathers, etc. with the identification of any nests and/or perches are performed.

Risk Management

The risk assessment prior to the first installation has been performed for each premise of the facility, having regards to their different susceptibility to the same pest, depending on likelihood of contamination to the implant, even indirect, related to the implant and to the goods.

The current pest control system, demonstrates that the conditions exist to limit its entry, circulation and proliferation in sensitive areas (*preventive anti-intrusion operations*) and that suitable strategies are put in place to promptly detect any presence at their internal (*monitoring*).

Data verification and trend analysis also document that the pest monitoring and capture system is effective and efficient.

The monitoring system has been designed according to current regulations, respecting the minimum mandatory requirements, in fact, have been installed devices suitable to avoid the presence of rodents, and other animals or insects.

In addition, effective means of control and precaution are implemented against insects, rodents and other harmful animals, always respecting the health of workers “*danger or indirect harm for humans*” due to chemical contamination of surfaces and workplaces.

The monitoring applied to the vaccination center “La Fagianeria” was organized to quickly detect any signs of infestation in order to intervene before pests can stabilize and reproduce.

The monitoring plan used shall be carried out either by routine inspections or by appropriate capture devices (Tab. 4).

Pest Control	ME	MTS	ML
N. of installed devices	12	9	4
yearly interventions	12	12	12

Tab. 4 - Monitoring plan with description of capture devices

ME = Rodents - External - MTS = Crawling Insect Traps - Internal - ML = UV lamps Flying Insects - Internal

In summary, we can describe the pest control system installed in the “La Fagianeria” Vaccine Center site as consisting of stations (traps and dispensers) that are arranged both inside and outside the premises as follows:

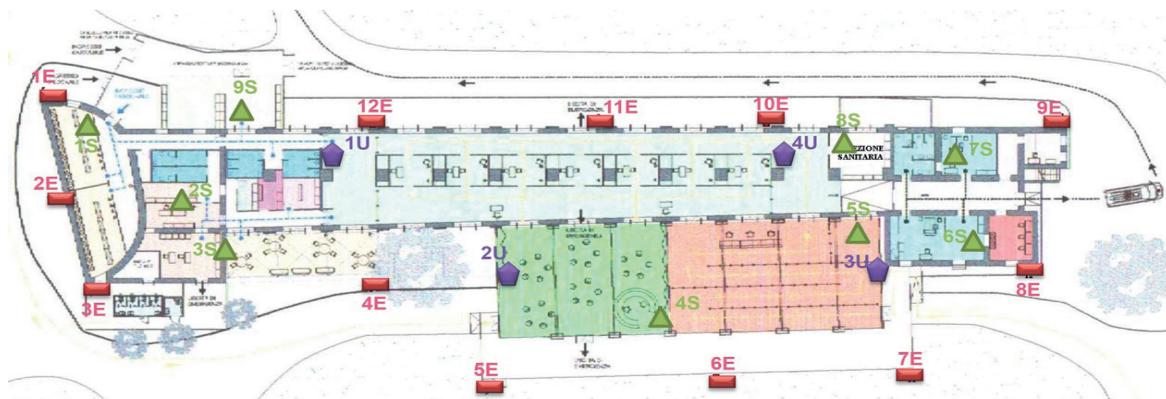


Fig. 2 - Floor plan of existing pest control stations

E- safety dispenser S- traps for crawling insects U- UV lamps for flying insects

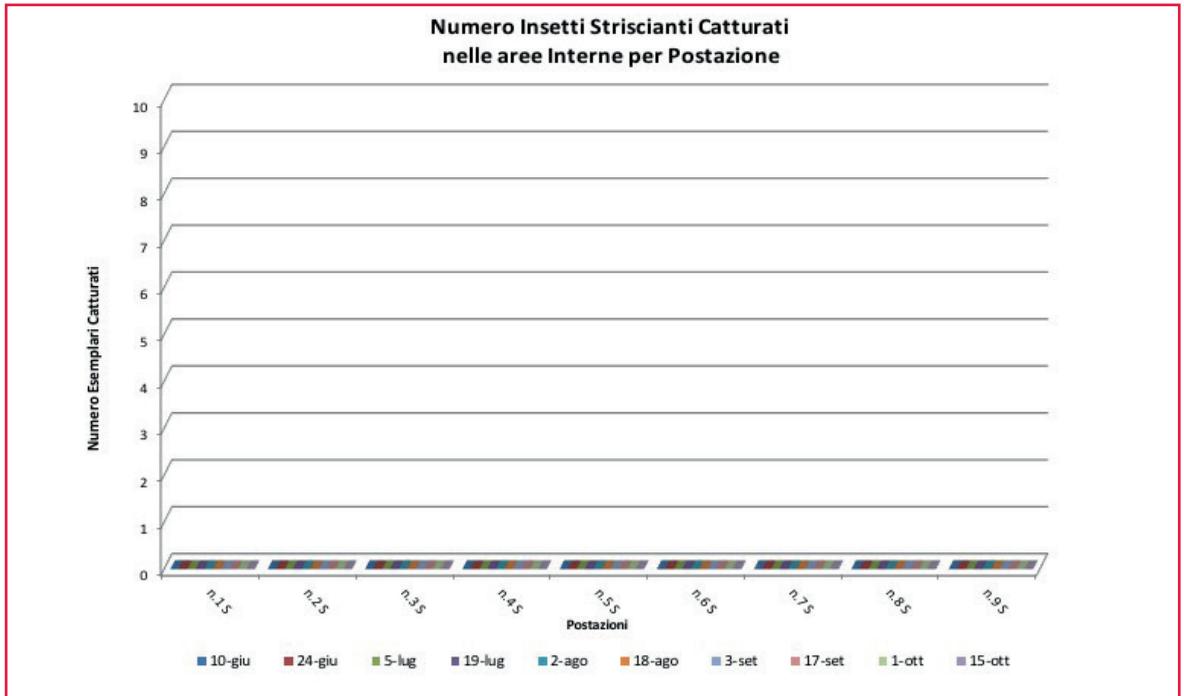


Fig. 3 - Graph of virtual bait consumption outside the Vaccine Center

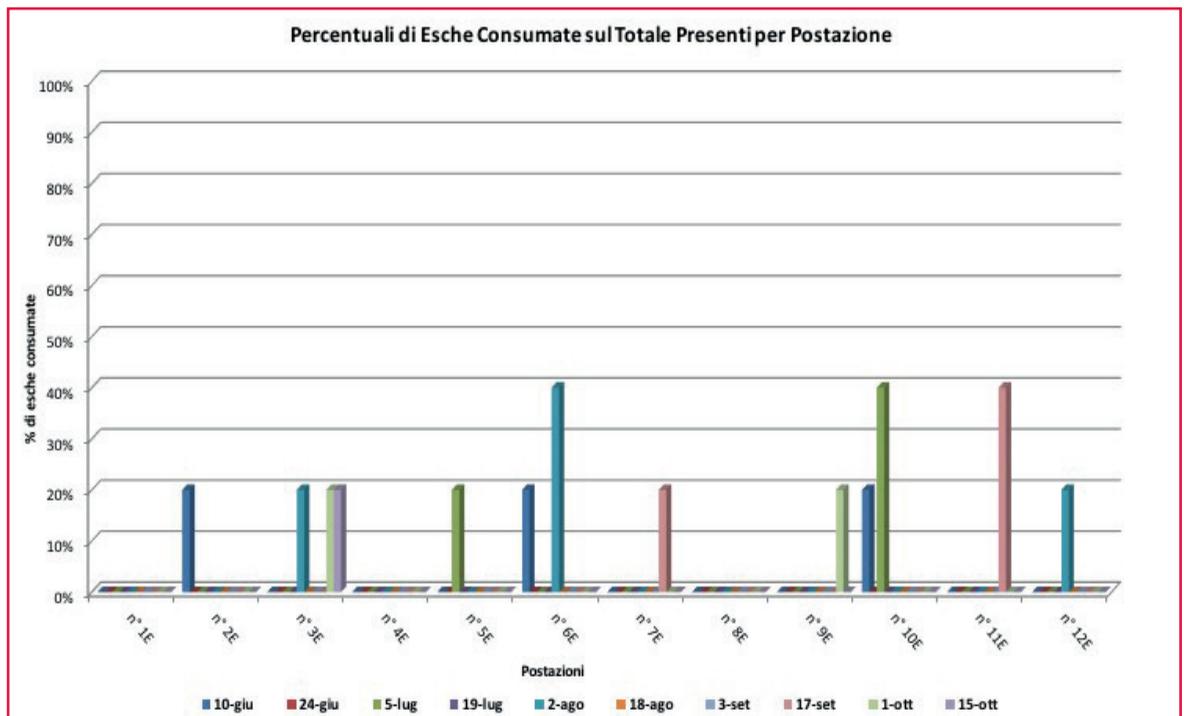


Fig. 4 - Graph of the specimens' number of crawling insects captured

- External gridle of safety dispensers for rodents (site boundary);
- Glue traps for crawlers (inside departments in critical areas);
- UV lamps for monitoring and mass capture for flying insects (near entrances and in critical areas).

To complete the site's pest control system, disinfestations / disinfections have been set up both in a preventive manner and as a corrective action to overcome / reduce the critical limits for flying and crawling insects (Table 5).

	DI	DI indoor
Pest control	2	2

Tab. 5 - Disinfestation of external / internal areas
DI = Disinfestation - DI indoor = Disinfestation of indoor areas in case of exceptional and localized events

The collected data have been used to create a trend analysis of the first 5 months of activity the graphs of the data are shown below (Fig. 3 to 5). The collected data do not show infestations in place and/ or critical situations, as it is clear that no catches

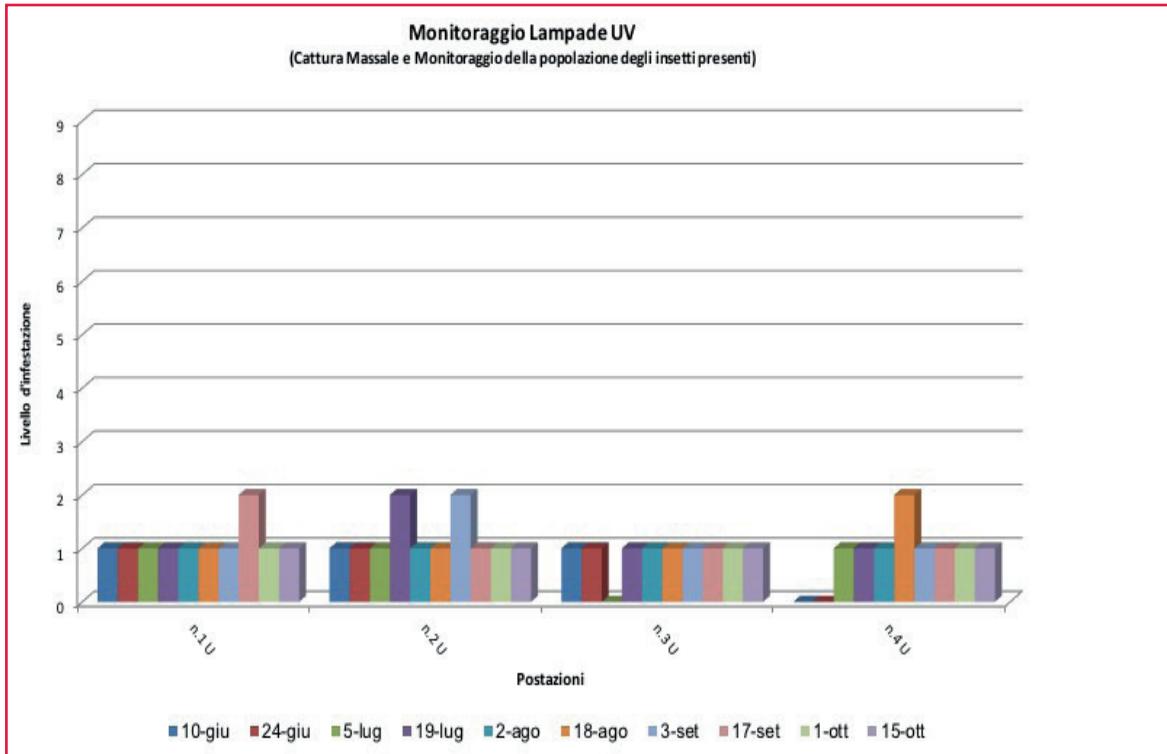


Fig. 5 - Graph of the insects' presence inside the vaccination center

of rodents have been made; the consumption of virtual bait outside is below the intervention threshold (corrective action).

Crawling insects were not captured, and no signs of insect presence were found outside the facilities.

For flying insects, the table of limits values was created according to the site, the location area and the activities carried out within the Vaccination Center (Table 6).

After the replacement of the UV light panels, these were scanned for species identification and specimens counting.

Pest infestation	Limits for the presence of flies and midges	Total number of insects captured per panel
0	No presence	0
1	with <= 10 flies and <= 30 midges	50
2	with <= 20flies and <= 50 midges	80
3	with <= 30 flies and <= 70 midges	120
4*	with <= 40 flies and <= 90 midges	200

Tab. 6

Verification of the flying insect capture data showed that level 4 was never exceeded and no corrective actions were carried out. it has always been level 1. small larger presences are in some periods where the infestation level was 2.

The pest control system installed and confirmed on the site, allows checking for any pests entrances.

CONCLUSIONS

Before analyzing the data, an inspection of the site object of this thesis was also accomplished, without finding traces and passages of pests.

No birds (pigeons, etc.) and / or signs of their presence were found inside and outside the Vaccinal Center.

The internal control activity has not led to evidence and/or signs of infestations, the preventive and continuous maintenance activities are carried out with commitment and continuity.

All the infrastructural improvements reported during the monitoring have been executed, with an improvement in the management of pests risk.

Experience has taught us that, even within this complex regulatory framework, the execution of a truly effective and efficient pest control is still far from guaranteed.

The presence of endemic pests such as small rodents, crawling insects and winged or micro-organisms can, in fact, pose a serious risk to the health of users and health professionals since they can act as “vectors” for the introduction and spread of diseases and possible allergens to humans.

Pest Management therefore plays an important role in both protection of public health and also in the one of health facilities from direct and indirect damages that can cause significant losses both in financial terms and in terms of the quality of the service offered to users.

The evolution of health organizations towards social welfare intervention systems characterized by a certain operational complexity, also through the multi-professional participation of the different operators, resulted in the need to pay more attention to the activities of Pest Control to ensure the citizen user of quality health services as a response to his growing

and more complex health-care demand, in view of the progressive ageing of the population, which increasingly requires a multiplicity of professional interventions, increasingly integrated, to ensure a complete and satisfactory response¹⁰.

During the inspection, carried out on the last day of internship (22/10/2021), together with the Company Tutor, the Health-care Representative and the Logistic Representative, the entire Vaccination Center was subjected to further analysis by the parties, in view of the possible criticality in terms of pests, **and it was decided to reconfirm and validate the management**

system of Pest Control applied to the Health Facility in question.

I would like to thank my company for giving me the chance to carry out this great professional experience that brought a cultural, behavioral and professional change in me. thanks also to the proactive attitude of the company strategic management which, in SARS-COV-2 pandemic emergency, has been able to integrate the work of various specialists among health-care personnel, including **“environmental and workplace prevention technician” and “specialist in prevention health professions sciences”**.

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