Plan of surveillance and prevention of the effects of excess temperatures about health.

CONCEPTO	Redactado por	Revisado por	Aprobado por
PUESTO	Subdirector de Epidemiología. SES.	Director-Gerente del SES.	Consejero de Salud y Política Social
NOMBRE	Julián Mauro Ramos Aceitero	Joaquín García Guerrero	Luis Alfonso Hernandez Carrión.
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FIRMA			

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1. Introduction.

The so-called “heat waves”, from a health perspective, especially affect children, the elderly and people with underlying chronic pathologies; and from a social point of view, marginalization, isolation, dependency, disability, the living conditions of people with fewer resources, add risk factors that make even more vulnerable groups that, precisely because of their socio-economic conditions, economic, they must be more supported. The situation experienced in the summer of 2003 as a consequence of the presence of a “heat wave” highlighted the need to improve information and coordination systems between the different Administrations.

and Departments to be able to prevent and reduce the negative effects of possible similar situations, which led to the establishment during the summer of 2004 of a Plan of preventive actions against the effects of excess temperatures on health in Extremadura by the then Ministry of Health and Consumer Affairs, based on what established in the National Plan prepared by the then Ministry of Health and Consumption and integrated into it, and with the participation of the different Ministries and public and private organizations involved.

The application of the Plan for monitoring and preventing the effects of excess temperatures on health in recent years has been having a positive impact on the prevention of problems and diseases related to exposure to excessive heat. The implementation of the Plan is fulfilling its main objective: the prevention of health damage caused by excess heat. In general terms, the care burden has been reduced, the population has been informed about how to protect themselves and care for those most at risk, and problems have been avoided for the most unprotected groups. Thus, we have arrived at this **Plan for monitoring and preventing the effects of the heat wave on the health of Extremadura, which**

will remain in force in successive years, with modifications and improvements necessary to adapt it to the current National Plan and the possibilities and structure organization of the Autonomous Community.

As in the previous ones, an essential aspect of this Plan is the involvement of Social Services, since it is the elderly, especially the most unprotected, who are the most vulnerable. Another essential element is information for citizens, the most at-risk groups and health and social services professionals. Therefore, social organizations and especially awareness and support for

the most vulnerable citizens will be essential to avoid to the greatest extent possible damage to the population.

Thus, this Plan establishes the necessary measures to reduce the effects associated with heat waves and the institutions involved in the establishment of these measures, both from the Autonomous Administration and from the Central and Local Administration and from private institutions. The Plan attempts to collect the real magnitude of the problem, existing scientific knowledge and future estimates; It then specifies the actions planned for the prevention of health effects, and for the detection and control of alerts, structured into several levels of action according to the level reached by temperatures by provincial and regional geographical areas, depending on the temperature thresholds obtained from their time series. Finally, the criteria are established for an information system that allows active surveillance of the risks associated with exposure to extreme temperatures, with the collection of predictive information on environmental temperature, healthcare and epidemiological information.

Extreme temperatures. Heat wave:

During the last decades there has been increasing interest in the effects of “climate change” that has materialized in the United Nations Framework Convention and in the Kyoto Protocol.

The conclusions of the Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC), published at the end of 2007, show that the observed global warming due to climate change is unequivocal, that the impacts of climate change They are already negatively influencing many physical and biological systems and these effects will increase. Continued global warming caused by increased greenhouse gas emissions into the atmosphere will have a broad and significant impact on the economy, environment and health. The projected effects due to climate change are very varied, affect a wide spectrum of ecological systems and socioeconomic sectors and are unevenly distributed across different territories and different regions. The Mediterranean region has been identified as a of the areas most vulnerable to climate change.

To improve and strengthen the capacity of the health sector to confront the fight against climate change, since then the Ministries of Health, Social Policy and Equality and Environment and Rural and Marine Environment, linked to the Government's policies on Climate Change and Health, the Health and Climate Change Observatory was created, as

instrument for analysis, diagnosis, evaluation and monitoring of the impacts of climate change on public health and the National Health System, of the health situation that is altered by climate change in our country, evaluating scenarios
and models, in order to help decision making, prioritize problems and
propose actions that resolve them.

Environmental pollution and increases in human-caused greenhouse gases could increase the frequency and intensity of extreme heat events, also known as “heat waves.”

There is currently no internationally agreed definition of “wave of
heat". But it is normally accepted that this phenomenon is associated with abnormally high maximum and minimum temperatures with respect to the period considered and its persistence over time.

In Spain there is an important geographical variability that must be taken into account when applying prevention measures. However, there is still some uncertainty about the threshold temperature that should be considered as a wave of
heat.

The criterion assumed by this Plan is based on climatological and health variables obtained from the analysis of historical series and studies carried out in our country. One of the criteria, not the only one, that will be taken into account is exceeding the threshold temperature.

A threshold temperature is understood to be one that exceeds the 95th percentile of the maximum temperatures in the locality. The climatic diversity of our country remains
reflected in the threshold values that can range between 26.2º C in La Coruña and 41.2º C in Córdoba. This variability, on a smaller scale, can be observed in the territory of the Autonomous Community, with milder average threshold temperatures in the province of Cáceres (38º maximum and 23º minimum) than in Badajoz (40º maximum and 21º minimum). , generally maintaining an ascending north-south gradient.

To assess the impact of the heat wave we need to have the values of maximum daily temperatures, the maximum reached, the days in which the threshold temperature was exceeded and the intensity index of the heat wave obtained as the sum of the number of degrees per above the threshold temperature during this period. This

index combines both intensity and duration of the wave.

According to the forecasts for the period 1950-2100 made by the AR5 of the IPCC, climatic changes will occur throughout the 21st century, among which the
following:

- More episodes related to high temperature extremes and fewer
related to extremes of low temperatures.

- Heat waves will be more frequent and will last longer.

- In the absence of large volcanic eruptions and assuming no significant future changes in solar irradiance, the change in temperature
global average surface area for the period 2016-2035 compared to the reference period (1986-2005) will be in a range between 0.3ºC and 0.7ºC.

- A higher temperature increase will take place in the Mediterranean Region to the global average, more pronounced in the summer months.

The possibility of a heat wave repeating itself in any European country It is plausible, this reason in itself justifies the continuity of the Plan.

Health effects of extreme temperatures:

Human exposure to elevated ambient temperatures can cause insufficient response of the thermoregulatory system. Excessive heat can alter our vital functions if the human body is not able to compensate for variations in body temperature. A very high temperature produces loss of liquids and
of electrolytes that are necessary for the normal functioning of the different organs.

Thermoregulation mechanisms may be decompensated in some people with certain chronic diseases, undergoing certain medical treatments and/or with disabilities that limit their autonomy.

Exposure to excessive temperatures can cause health problems such as cramps, dehydration, heat stroke, heat stroke (with multi-organ problems that can include symptoms such as ataxia, seizures and even coma).

The rubric identified as a cause of direct mortality due to excess environmental temperature in the tenth revision of the International Statistical Classification
of diseases , Causes of Death and Related Health Problems (ICD-10), is the one coded as X.30: *"Exposure to excessive natural heat".*

The impact of exposure to excessive heat is determined by physiological aging and underlying diseases. Normally, a healthy individual tolerates a variation in their internal temperature of approximately 3º C without their physical and mental conditions being significantly altered. From 37º C onwards, a physiological defense reaction occurs.

Elderly people and very young children are more sensitive to these temperature changes.

Impact on mortality of elevated temperatures:

Excess mortality has been associated with periods of 3 or more consecutive days of unusual temperatures, whether in summer or winter, and its effect can be observed in that same period or with a delay of up to three days after the increase in temperatures. In Extremadura, the study of the mortality time series shows a relative summer excess mortality every year, to a greater or lesser extent.

To a lesser extent, around the month of August, which occurs mainly in the group of older people, over 65 years of age.

The heat wave of 2003 had a significant effect on mortality in several European countries, especially in France (classified as a “health earthquake”), Portugal (devastating fires), Great Britain, Belgium, Germany and Italy. In France the

50% of deaths occurred in nursing homes, 30% in hospitals and 20% in private homes.

Risk factor's:

The main risk factors associated with exposure to natural heat excessive are:

Personal factors:

• Elderly population, especially in the age group over 65 years. • Infants and children under 4 years of age.

• Cardiovascular, respiratory and mental diseases (dementia, Parkinson's).

• Chronic diseases (diabetes mellitus), excessive obesity. • Certain medical treatments (diuretics, neuroleptics, anticholinergics and tranquilizers).

• Memory disorders, comprehension or orientation difficulties or poor autonomy in everyday life.

• Difficulties in adapting to heat. • Acute illnesses during episodes of excessive temperatures.

• Consumption of alcohol and other drugs.

Environmental, labor or social factors:

• People who live alone, on the street and/or in social and economic conditions disadvantaged.

• Absence of air conditioning and homes that are difficult to cool.

- Excessive exposure to heat for work reasons (manual work outdoors or that require high contact with hot environments), sports (sports of great physical intensity) or leisure.

- Environmental pollution.
- Very urbanized environment.
- Continuous exposure for several days to high temperatures that persist at night.

Local factors:

Although the previous mechanisms act in a general way, local factors They play a decisive role, since they determine the comfort temperature, the thresholds for defining heat waves and the temperature-mortality association, that is, the magnitude of the impact. In Spain, these differences can be up to 15 º C for the heat waves.

The main local factors are:

- Demography, which determines the composition of the population pyramid, and therefore, the importance of susceptible groups.
- Climatology, to the extent that individuals adapt to the local climate. This explains that the effect of thermal extremes does not depend on values absolutes, but whether or not we are within the *normal* range of temperatures in a certain place.
- The domestic equipment and the level of income, on which the capacity of families to face temperature situations extremes such as heat and cold waves.

Justification:

We are, therefore, faced with a health problem that must be addressed from the Public Health structures in coordination with the respective competent state, regional and local administrations, in the areas of meteorology, social services, health care services, emergency services, nursing homes, volunteer organizations, etc.

Furthermore, the demographic structure of our Autonomous Community characterized by progressive aging justifies the need to maintain the prevention measures adopted in previous years during this year.

2.- Objectives.

The general objective of the Plan is to reduce the impact on the health of the population of extreme heat temperatures.

The specific objective is to develop the activities provided for in the National Plan of preventive actions against the effects of excess temperatures on health, in the territorial scope of the Autonomous Community, establishing an operational protocol.

3.-Period of operation of the plan.

From June 1 to September 30 of the corresponding calendar year.

4.- Activities.

The Action Plan is based on the following activities: 1.- Coordination between competent public and private entities.

2.- Previous and ongoing information to the population about the effects of heat excessive.

3.- Identification of special risk groups and information to them.

4.- Prediction of the occurrence of heat waves.

5.- Information to health professionals and social services at the level alert.

6.- Alert of social care and assistance devices for both care primary as well as hospital.

7.- Epidemiological information and surveillance system.

4.1.- Coordination between entities, units and services:

The need to coordinate all the administrations, services and entities involved makes it necessary for the Plan to be previously known, approved, followed, evaluated and, where appropriate, modified with a broad consensus of all of them. For this creates a **commission responsible** for the coordination, development and subsequent evaluation of

the activities of the Plan, with public and private entities with the powers necessary for the execution of this Plan, chaired by the head of the **Department with powers in matters of Health,** or person to whom he delegates, and made up of representatives of the General Directorates or assimilated Units with jurisdiction in **Public Health** matters (person who will serve as secretary of the commission) **Health Care, Social Services, Environment, Interior and Local Administration,** as well as the Emergency Coordination Center **112,** the **Government Delegation** and the **Federation of Municipalities and Provinces** of Extremadura (FEMPEX).

4.2.- Prior and ongoing information to the population about the effects of excessive heat:

The General Directorate of Public Health will carry out an information campaign for the general public through press releases, with content related to general preventive measures against high temperatures, in addition to other information of interest for the summer; as well as with informative brochures with the same contents that can be consulted on the websites of the Board of Directors.

Extremadura and dependent organizations.

At the same time, and as part of the ongoing information campaign, **telephone information points** will be established on the effects of excessive heat and how to prevent it, on the usual telephone numbers of the following institutions: - Extremadura Health Service in the Area Management of health.

- Unique emergency telephone number for Extremadura 112.

4.3.- Identification of special risk groups and information to them:

The **municipal-based Social Services** and the corresponding units of the Autonomous Administration will identify the especially vulnerable population due to age or social situation, through home help programs, tele-assistance, social centers, etc., collecting information to This requires the collaboration of appropriate non-governmental organizations (example: Red Cross, Cáritas...).

The information campaign by social services will be specifically directed to this population, adapting it to the specific needs and understanding capacities of each group.

We will work with the following especially susceptible population groups:

- o Elderly population, especially in the group over 65 years of age. o Infants and children under 4 years of age.
- o Mentally ill people (dementia, Parkinson's).
- o People with memory disorders, comprehension or reading difficulties orientation or little autonomy in daily life.
- o People with difficulties adapting to heat. o Alcohol and other drug users.
- o People who live alone, on the street and/or in social conditions and economically disadvantaged, and transients.
- o People who live in places with lack of air conditioning and housing difficult to refrigerate.
- o People with excessive exposure to heat for work reasons (work manual work outdoors or that require high contact with hot environments), sports (sports of great physical intensity) or leisure (youth camps, etc.).
- o Especially people with the above characteristics who live highly urbanized environments.

4.4.- Prediction of the occurrence of heat waves:

Prevention of heat effects is possible to a large extent. For this, it The first thing is to know when a heat wave may occur. The State Agency of Meteorology is currently capable of predicting maximum and minimum temperatures with high reliability and 5 days in advance at the provincial level.

Likewise, the Meteorological Information System established by the **Ministry with powers in matters of Environment,** allows establishing this prediction for 11 “temperature control zones” into which the territory of the Autonomous Community.

The objective of this prediction is to know in advance the risk of a heat wave that may affect a specific population residing in a specific geographical area. Thus, exceeding the threshold temperatures during a previously established period of time together with the analysis of health indicators will allow the activation of the alert and alarm levels provided for in the Plan.

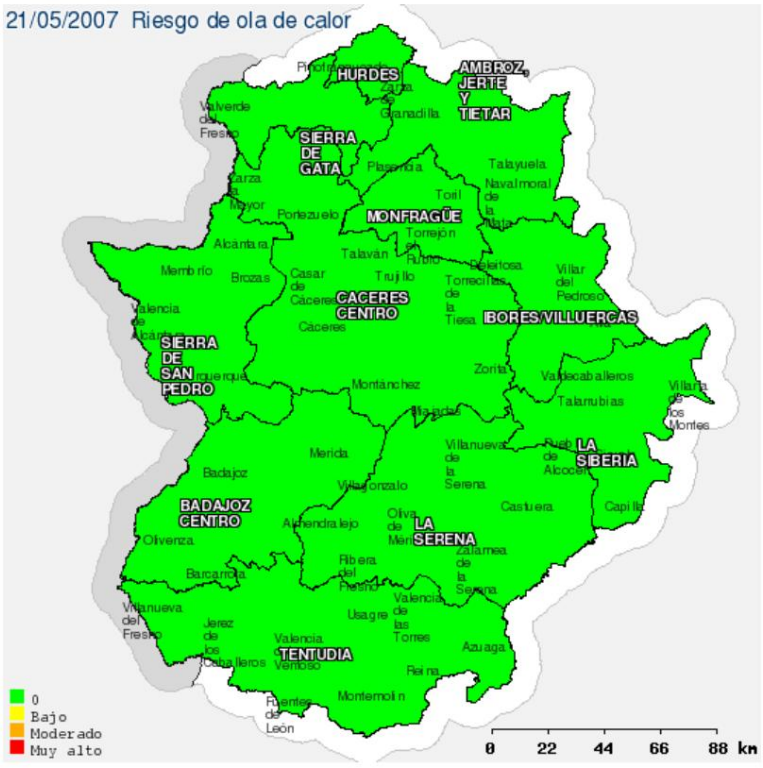
This meteorological information system is based on the following items:

a) Criteria for assigning reference thresholds of excessive temperatures.

The criteria have been established by the Ministry of Health, Social Services and Equality, based on specific studies promoted by the department, observations made by the Autonomous Communities and technical-scientific information from the State Meteorological Agency.

As a general rule, the 95th percentile of the historical series of the **daily maximums and minimums** of the capitals in summer is considered . As exceptions, for mild climate stations with low daily thermal oscillation (mainly maritime areas), in the north and northwest of the peninsula, the 95th percentile of the historical series of **absolute maximum summer temperatures.** Similarly, in continental climate stations, the threshold considered for the minimum temperature corresponds to the 95th percentile of the **highest** summer minimum temperature series.

In addition to the above, and based on the same criteria developed by the Ministry of Health, Social Services and Equality, the Prevention and Extinction Service of Fires of the General Directorate of the Environment, has established the levels thresholds of the 11 temperature control zones established in said Geographic and Meteorological Information Service, these threshold levels will be those used for the assignment of alert levels in each of the 11 zones considered.



b) Criteria for assigning excessive temperature levels or "risk".

Based on the established maximum and minimum threshold temperatures, and the prediction of maximum and minimum temperatures for five days, in addition to the consideration of persistence as a risk factor, the assignment of the levels is carried out using
the following criteria:

1.- If the number of days in which the predicted maximum and minimum temperatures ***simultaneously*** exceed the respective reference threshold values is **zero,** the index is "0", the assigned level is called **"LEVEL 0" (or no risk). ,** and
It is represented with the **color green.**

2.- If the number of days is **one or two,** the indices are respectively "1" and "2",
The assigned level is called **"LEVEL 1" (or low risk),** and is represented by the **yellow color.**

3.- If the number of days is **three or four,** the indices are respectively "3" and "4", the assigned level is called **"LEVEL 2" (or medium risk),** and is represented with the **color orange.**

4.- If the number of days is **five,** the index is "5", the assigned level is called **"LEVEL 3" (or high risk),** and is represented with the **color red.**

c) Daily information on expected maximum and minimum temperatures, corresponding to the current day and the following five days.

The Ministry of Health, Social Services and Equality will provide daily temperature predictions for the next 5 days at the provincial level, which will allow the alert level to be established (0, 1, 2 or 3) according to the information provided by the State Agency. of Meteorology, posting the information on its website.

Furthermore, the General Directorate responsible for the Environment,
will provide temperature predictions by email for the 11 established temperature control zones, as set out below.

4.5.- Information to health professionals and services social alert level:

The organizations and units involved in the Plan will consult the information on predictions at the province level, made by the State Meteorological Agency on a daily basis on the website of the Ministry of Health, Social Services and Equality.
(http://www.msps.es/ciudadanos/saludAmbLaboral/planAltasTemp/2010/home.htm) to purpose of acting based on the level of risk, as indicated in the following point 4.6.

On the other hand, as indicated in the previous point, daily and via email, the General Directorate responsible for the environment will send information on maximum and minimum temperatures expected in the 11 temperature control zones of the territory of the Autonomous Community, and on the corresponding risk levels signed, to the following Organizations, centers and

units:

- Cabinets of the Ministries competent in matters of:
  - Health.
  - Social Policy.
  - Inside.
  - Public administration.
- General Directorates competent in matters of:
  - Public health.
  - Healthcare.
  - Social services.
  - Local Management.
  - Civil protection.
  - Inside.
- Direction-Management of the Extremadura Health Service (SES).
- SES Health Area Management.
- Direction-Management of the Extremadura Service for the Promotion of Autonomy and Dependency Care (SEPAD)
- Territorial Management of SEPAD.
- 112 coordination center.
- Press Office of the Government of Extremadura.
- Government Delegation in Extremadura.
- Federation of municipalities and provinces of Extremadura (FEMPEX)

4.6.- Alert of social care devices in the presence of risk levels 2 (orange) or 3 (red):

If the assigned risk level is **2 (orange)** or **3 (red),** the information will be forwarded **from each of the agencies, centers and units involved** to the corresponding area of competence in the fastest and most efficient way (electronically or fax). and specifically and obligatorily to the following:

- **The SES Area Managers:** Will inform all health centers and hospitals within the territorial scope of the health area. Within the hospital, and by the center's Medical Directorate, the services that may be involved will be informed, specifically the Emergency Department, and plant clinical services (Internal Medicine and Pediatrics).

- **The SEPAD area managers:** Will inform all senior centers (residences, day centers, occupational centers, etc.) of the Autonomous Community, especially those with a boarding regime, as well as those dependent on the Board of Extremadura as well as private centers or centers dependent on other administrations; So as well as municipal grassroots social services and other institutions or organizations involved in caring for the elderly (Red Cross, Cáritas, other NGOs, etc.,...)

- **The General Directorate responsible for Public Health:** Will inform the associations and NGOs involved in caring for the population at special risk. (older, sick, etc...)

- **The General Directorate responsible for Social Services:** It will inform all children's centers in the Autonomous Community, especially daycare centers, both those dependent on the Government of Extremadura and private centers or those dependent on other administrations and specifically to early childhood education centers, shelters for minors and the Center for compliance with measures judicial.

- **The General Directorate responsible for the Interior:** Will inform all hostels, youth camps and similar sports or leisure activities outdoors that are being held in the Autonomous Community.

- The Federation of municipalities and provinces of Extremadura (FEMPEX) will inform all the municipalities of the Autonomous Community, which, in turn, They will inform their base social services.

- The **Press Office of the Government of Extremadura:** Will inform all media that operate within the territorial scope of the Autonomous Community.

Once the information on the alert level has been received, if levels **2 (orange)** or **3 (red) are reached,** the **Social Services** of the municipalities and those corresponding to SEPAD will actively contact the population groups at special risk. , with the aim of detecting people at risk, ensuring that the necessary measures are being taken to minimize the risk of being affected by extreme temperatures or, if applicable, to ensure care, assessment, treatment or admission to hospital. appropriate places of the people who require.

For its part, **the General Directorate responsible for the Interior,** in situations of alert level **2 (orange)** will recommend the restriction or suspension of outdoor leisure activities that involve physical effort and subjection to high temperatures, and in situations alert level **3 (red)** will suspend such activities.

4.7.- Alert of assistive devices, both attention primary and hospital, in the presence of risk levels 2 (orange) or 3 (red):

Once the information about the alert situation at level **2 (orange)** has been received or at level **3 (red)** the public and private assistance devices will launch the next activities:

If the alert level is 2 (orange): The assistance devices will maintain a high attitude of alert and suspicion towards those affected by the high temperatures, both in Primary Care consultations and, especially, in the continuing care points and services. hospital emergencies. Hospital centers will put in place the necessary provisions to allow the activities of the next level of the Plan to be adopted within a period of 24 hours.

If the alert level is 3 (red): The assistive devices for both Attention Primary, specifically at points of continued care and on non-working days, such as hospital centers, will accentuate their level of alert and suspicion, and ***will activate the resources that are expected to be necessary for the eventuality of***

need to increase the response capacity in general and the income of hospitals in particular.

In any case, and depending on the evolution of the situation, ***the Ministry is happy in matters of Health will propose to the Governing Council*** *of the Junta de Extremadura the establishment of emergency measures that are considered appropriate to reduce, minimize or avoid health impacts on the population.*

These measures will be protected by the legislative order provided for these cases.

4.7.- Epidemiological information and surveillance system:

The objective of this system is to know the real impact on the health of the heat wave population once it occurs. The structure, organization, process and results to be obtained from the proposed system are based on previously existing information systems and taking advantage of partial information circuits currently in operation. It allows the capacity for territorial aggregation, from a local level to the regional level, and can be sent and accumulated up to the national level.

In the institutional framework in which it is framed, the system is a cooperative model of different areas of the Administration, health and non-health, with the participation of the Central Administration of the State, specifically the Administration of Justice through the Ministry of Health. and Social Affairs.

Surveillance of morbidity and mortality can make it possible to evaluate the impact of extreme temperatures on the usual or normal general mortality for each period of the year. Although this information will not be the main information for establishing alert levels and actions in each case, it will be what establishes the degree of importance of what is happening. Rapidly obtaining data on general mortality is one of the Plan's priorities. The deaths that occurred in hospitals and the settlements of the deaths in the Civil Registry will be the sources of information

to use.

The information system will operate during the period of validity of the Plan, from June 1 to September 30 of the current calendar year, both inclusive.

a) Morbidity surveillance:

The Area Management of the SES will inform the General Directorate responsible for Public Health of the SES, immediately, by fax or telephone or email, of any **case of care, and/or admission, and/or death due to related causes. with heat** (diagnosis of heat stroke, dehydration, and others), using the model indicated at the end, which will be available in the Document Manager of the

SES Portal. From said General Directorate the information will be raised to the Center National Epidemiology.

The General Directorate responsible for Health Care will maintain the information system that allows knowing at any time the number of emergencies treated in primary care and in SES hospitals, as well as the number
of income in these, and which of them have been due to “heat strokes”.

b) Mortality surveillance:

In addition to what is indicated in the previous point regarding notification of the occurrence of deaths due to heat-related causes, the Ministry of Health, Services
Social and equality, through the National Epidemiology Center, the General Directorate responsible for Public Health will communicate the information collected from the computerized Civil Registries of the Autonomous Community referring to the deceased registered daily in them. This information will allow us to establish the degree of importance of what is happening by allowing us to evaluate the impact of temperatures.
excessive over normal general mortality.

5.- Evaluation of the plan.

The evaluation of the Plan will be carried out once it is finished, starting on October 1 of the current year, based on the morbidity that occurred during the summer.
corresponding and the mortality that occurred compared with the expected mortality for this period according to the historical mortality series, as well as by correlation of the mortality that occurred with the temperatures reached, all according to the models established by the National Epidemiology Center of the Carlos Health Institute III.

Notification of heat-related pathology.

Date of notification to the Epidemiology Subdirectorate ___/___/_____

(Use dd/mm/yyyy/ format for dates and 24-hour format for hours).

Patient data

1st surname: _____ 2nd surname: _____ name: _____

Age: ___ years (if less than 2 years in months: ____) Sex: Female ☐ Male ☐

Home town _____

If it is a citizen with habitual residence outside of Extremadura, indicate:

Province: _____ _____, Location: _____ Country: _____

The case was heard in:	YEAH	**NO**	**NC.**
Primary care consultation:	( )	( )	( )
Primary care emergencies:	( )	( )	( )
112 – EMU:	( )	( )	( )
Hospital emergencies:	( )	( )	( )
Hospital admission:	( )	( ),	

If yes: date of entry: ____ / ____ / _____, admission time: ____,

Diagnosis upon admission: _____

Center: _____, Service: _____

Clinical picture: (specify as possible)

Date of onset of symptoms: ____/_____/_____, at _____ hours.

Favorable **evolution ,** ( ) Death, if applicable, date: ____/_____/_____ and time ____

Background:

Circumstances surrounding the case: Specify as much as possible the moment of exposure to heat, indicating the date (and hours if applicable), the reason (work, sport, etc...) and the place (outside, home, field, factory , etc...)

Completion date: __/___/___.

Person who completes the form: _____, signature: