



Health and Family Counseling
ANDALUSIAN PLAN FOR THE PREVENTION OF EFFECTS
OF EXCESSIVE TEMPERATURES ON HEALTH 2021
Ministry of Equality, Social Policies and Conciliation
Ministry of the Presidency, Public Administration and Interior

ANDALUSIAN PLAN FOR THE PREVENTION OF EFFECTS OF EXCESSIVE TEMPERATURES ABOUT HEALTH 2022



Andalusian Health Service

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INTRODUCTION

The relationship that temperature has with morbidity and mortality is known; numerous investigations have highlighted it, establishing itself with both minimum winter temperatures and high summer temperatures.

Heat-related mortality is also known to occur at temperatures higher in those regions with higher average temperatures. The same happens with the cold, that is, a process of adaptation of the populations to the usual circumstances of their physical environment.

For this reason, studies carried out in different countries around the world have shown different values from which mortality associated with heat increases, depending on this acclimatization. For this reason there is no definition commonly agreed upon limits of the heat wave, although it is always based in the intensity and duration of high temperatures. In any case, the variation geographic, fruit of the adaptation of the population and the habits and conditions of protection, makes it necessary to establish a threshold level with local data, to from which an increase in the effects on the health.

On the other hand, there are increasing signs of the emergence of climate change, such as possible effect of various factors of human development. There is not yet a scientific consensus on specific forecasts, but it seems clear that in recent years 25 years the average world temperature has increased 0.6° C. The “World Meteorological Organization” estimates that the number of deaths related to the Heat will double in the next 20 years. However, on the contrary, the improvement in protection conditions, especially the increased use of air conditioning, are has been associated with less impact from extreme heat conditions. According to forecasts for the period 1950-2100 made by the IPCC (Intergovernmental Pannel on Climate Change) climate changes will occur, among which the existence of higher maximum and minimum temperatures, more days of intense warmer and fewer icy days in most continental regions and more heavy rainfall in most regions.

HEALTH EFFECTS

Exposure to high temperatures causes direct effects on the body. Of

Lesser to more serious we could include:

- Heat stress, defined as the discomfort and psychological tension associated with heat exposure to high temperatures.
- Heat exhaustion, which is a moderate illness due to water and/or salt depletion. Signs and symptoms include intense thirst, weakness, unwellness general, anxiety, vertigo, dizziness, and headache. Body temperature may be normal, below normal or slightly elevated ($< 40^{\circ}$).
- Finally, heat stroke is a disease/syndrome characterized by a high body temperature of central origin, which increases above 40° C, and with a dysfunction of the central nervous system that results in delirium, convulsions or coma.

Human exposure to elevated ambient temperatures can cause insufficient response of the thermoregulatory system. Age influences this, since the elderly population and young children are more vulnerable, due to greater difficulty in controlling temperature regulation mechanisms. There are people that have a higher risk of suffering effects due to heat, due to changes in the sweating, as occurs in diabetic peripheral neuropathy, or who take anticholinergic medications, or barbiturates, which depress reflex regulation of body temperature, or who consume excessive alcohol as it depresses the system central nervous system and also causes diuresis and therefore greater dehydration. Factors Socioeconomic factors such as poverty and social isolation also contribute to the risk. There are also people who carry out sports activities without sufficient protection. against the heat.

According to the forecasts for the period 1950-2100 made by the IPCC (Intergovernmental Panel on Climate Change) climate changes will occur, among which the following stand out.

- Higher maximum and minimum temperatures.
- More hot days and fewer freezing days in most regions continental.

The possibility of repeating excessively hot summers

In any European country it is plausible. This reason alone justifies by itself, the continuity of the plan since 2004.

In this context, the Ministry of Health and Families has carried out previously studies on the effects of heat. For example, in the most complete carried out, the morbidity and mortality in the period 1980 - 1997 were analyzed Andalusia associated with high environmental temperatures, through the Registry of Mortality of Andalusia and the Minimum Basic Data Set of Andalusia (CMBDA). In that period 1980-1997, 172 deaths were reported in Andalusia. attributable to excessive heat, ranging between 0 cases in 1984, 1986, 1987 and 67 cases in 1995. 65% of the total occurred in the month of July, 25% in the month of August, 9% in the months June and September and the remaining 1% in the months of May and October. The provinces in which the highest number of deaths have occurred from this cause were Seville with 48% and Córdoba with 30%, this being The last province had the highest mortality rate. People over 70 years old made up 65% of the cases. Analyzing the specific annual average mortality rates by age group, a significant increase was observed after 70 years of age.

In the CMBDA analysis, in the years 1994-98, 232 discharges were recorded for the aforementioned causes, ranging between 10 in 1997 and 114 in 1995. As with mortality, 64% of admissions for these occurred during July. Causes, followed by August (16%) and June (9%). 50% of the admissions occurred in hospitals in the provinces of Seville and Córdoba. In the distribution by age, it stands out that the extreme age groups, under 10 years of age (especially under 1 year with 6% of cases) and people over 70 years old, are those who They concentrate the greatest number of income.

On the other hand, in the summer of 2003 a large number of European regions suffered a prolonged increase in temperatures, which acutely caused a strong increase in mortality, and which had great significance and media impact. France It was the most affected country, with a number of victims that tripled that of the second, Italy. In France, 50% of the deaths last summer occurred in residences of older people, 30% in hospitals and 20% in private homes (MS and PS, France. Plan Nationale Canicule 2004). Mortality in Paris and suburbs was a

130% higher than the expected number. However, there have been episodes before similar, although more localized, for example the mortality in Chicago during the The 1995 wave was 147% higher, in the Athens wave in 1987 mortality doubled, and in the Los Angeles wave in 1963 it increased by 163%. In 2003 in Spain the network of Public Health Centers responded appropriately to the demand for care and social alarm was less.

Regarding the mortality record, given that in cases of hyperthermia the cause of death is not always recorded correctly, it is coherent to think that the first deaths attributable to the heat wave have not been counted as such. In our country, according to the study carried out by Martínez, F. Simón-Soria, F, and López Abente, G. 2003, an excess mortality of 8% has been estimated, which mainly affected people over 65 years of age. We are faced with a health problem that must be addressed from the Public Health structures in coordination with the respective competent state administrations, regional and local authorities, in the areas of meteorology, social services, health care, emergency services, nursing homes, volunteer organizations, etc.

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 on the same day or with a delay of up to three days after the increase of temperatures.

The demographic structure of our country, characterized by progressive aging, justifies the need to adopt prevention measures for the summer.

In relation to the measures to be taken this year, it should be taken into account that In Andalusia, action programs have been launched for some time before the summer period by the Ministry of Health and Families, framed within the Summer Health Program of the Ministry and the High Frequency Plan of the Andalusian Health Service. In both there is an area dedicated to the consequences for health from high temperatures.

These actions now become part, along with those of other organizations of the Junta de Andalucía, of the ANDALUZIAN PREVENTION PLAN AGAINST THE EFFECTS

OF EXCESSIVE TEMPERATURES ON HEALTH that, in a way

jointly with the Ministry of Health and with the rest of the Autonomous Communities, we develop in order to prevent in the future, events such as those that occurred during the summer months of 2003.

PLAN OBJECTIVES

Reduce the impact of hot temperatures on population health extreme.

1. Reduce the impact on health associated with increased temperatures summer and possible heat waves, combining the necessary measures by of the different institutions of the Central Administration, of the Board of Andalusia and the Local Administration involved.
2. Establish a system of coordination and exchange of information between the institutions involved
3. Focus preventive efforts on populations at risk of morbidity and mortality due to elevated temperatures, identifying them and establishing personalized follow-up with the existing resources.

PLAN ACTIVATION PERIOD

In general, the Plan is activated from June 1 to September **15**, every year.

A **flexibility criterion** is introduced that allows activation outside of this period, by monitoring during the last fifteen days of the previous month (May 15) and a month after (October 15) the Plan activation period before mentioned.

ELEMENTS OF THE PLAN

The Plan's strategy is based on the following activities:

1. Prediction of the occurrence of heat waves based on the information provided by the State Meteorological Agency. Definition of potential risk groups and definition of alerts for excess temperatures.
2. Advance information to the Organizations involved, health professionals and Social Services, and general population about the Plan, the effects of heat

excessive and the situations classified as alerts that occur. Integrate it into a Communication Plan.

3. Coordination with administrations and public and private entities competent in the identification, monitoring and care of risk groups established. Implementation of an Information and Surveillance System.
4. Alert, where appropriate, of assistance devices, both primary care and hospitable
5. Information system on treated morbidity and mortality.

Risk factor's:

The main risk factors associated with exposure to heat waves are:

Personal factors

- Older people, especially in the age group over 65 years.
- Infants and children under 4 years of age.
- Cardiovascular, respiratory and mental diseases (dementia, Parkinson).
- Chronic diseases (diabetes mellitus), excessive obesity.
- Certain medical treatments (diuretics, anticholinergic neuroleptics 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 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 in the 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 remain at night.

Local factors

Although the previous mechanisms act in a general way, local factors play a decisive role, since they determine the comfort temperature, the threshold temperatures to consider and the temperature-mortality association, that is, the magnitude of the impact.

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. It explains that the effect of thermal extremes does not depend on values absolutes, but whether or not we are within the range of normality of temperatures in a certain place.
- Domestic equipment and the level of income, on which the ability of families to face situations of excessive temperatures depends.

DEFINITION OF RISK GROUPS AND ALERT LEVELS

In our area, **the population at special risk is defined as:**

Level 0:

People over 65 years of age, who have one or more of the following pathologies: COPD, heart failure, dementia, kidney failure, obesity excessive, hypertension or diabetes mellitus; and take some medication following: diuretics, hypotensives, anticholinergics, antidepressants and psychotropics.

People included in the Integrated Care Process for mental disorders serious.

Children under 4 years of age, and especially infants.

Level 1:

People over 65 years of age, living alone or with their older spouse also 65 years old, who have more than one of the following pathologies: COPD, heart failure, dementia, serious mental disorder, kidney failure, obesity excessive, hypertension and diabetes mellitus; who take more than one medication

following: diuretics, hypotensives, anticholinergics, antidepressants and psychotropics; and who have a home that is difficult to cool.

Level 2:

People who live alone, who have more than one of the following pathologies: COPD, heart failure, dementia, severe mental disorder, kidney failure, excessive obesity, hypertension and diabetes mellitus; take more than one medication of the following: diuretics, hypotensive agents, antidepressants, anticholinergics and psychotropics; and who have a home that is difficult to cool and who never receive visits.

It is considered that special attention should be paid to home environments of elderly people, to nursing homes and to areas with high marginality. To achieve this, there are different programs launched in these areas by the different competent Organizations that participate in the Plan.

The effectiveness of the Plan is based on the one hand on the temperature information provided by the State Meteorological Agency, anticipated at least 5 days and with data by province. This allows quick and prior information to be given to the population about the effects of excessive heat and prevention measures, as well as to activate the actions that different administrations have to implement to protect population groups at risk.

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

The **maximum and minimum threshold temperatures**, previously based on the 95th percentile of the historical series for maximum and minimum temperatures during the summer, were modified in the 2015 edition of the Plan. The current criterion is based on the maximum and minimum mortality "trigger" temperatures for each of the provincial capitals. The assignment of these temperatures has been based on series maximum and minimum temperature periods corresponding to the Observatory Meteorological located in each provincial capital and provided by the AEMET and in series of mortality from organic causes (ICD10: A00-R99) in the municipalities of more of 10,000 inhabitants of the National Statistics Institute.

In some provincial capitals, maximum temperatures have not been obtained or Minimum shooting mortality. In these cases, the temperature is maintained corresponding to p95 of the most recent time series of maximum temperatures and minimums during the summer as indicated in the corresponding table.

THRESHOLD TEMPERATURES 2022

Province	Maximum	Minimum
Almeria	36	26
Cadiz	32	24
Cordova	40	22
Grenade	36	18.8(*)
Huelva	36	22
Jaen	36	22
Malaga	40	26
Seville	40	24

Source: Temperatures approved by the Interministerial Commission for the effective application of the National Preventive Action Plan for the effects of excess temperatures on health (2015)

(*) Temperatures that would correspond to the 95th percentiles of the series of highest maximum and minimum summer temperatures
(Source AEMET)

Based on the established maximum and minimum threshold temperatures, and the prediction of maximum and minimum temperatures for five days, also considering the temperatures observed the previous five days, **four levels of temperature** are defined.

alert 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 in which the predicted maximum and minimum temperature, together with those observed on previous days, simultaneously exceed the reference threshold values 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 **color yellow**.
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**.

ALERT INFORMATION CIRCUITS

To activate the different alert levels in Andalusia, a system has been designed.

communication circuit that is shown schematically in Table I.

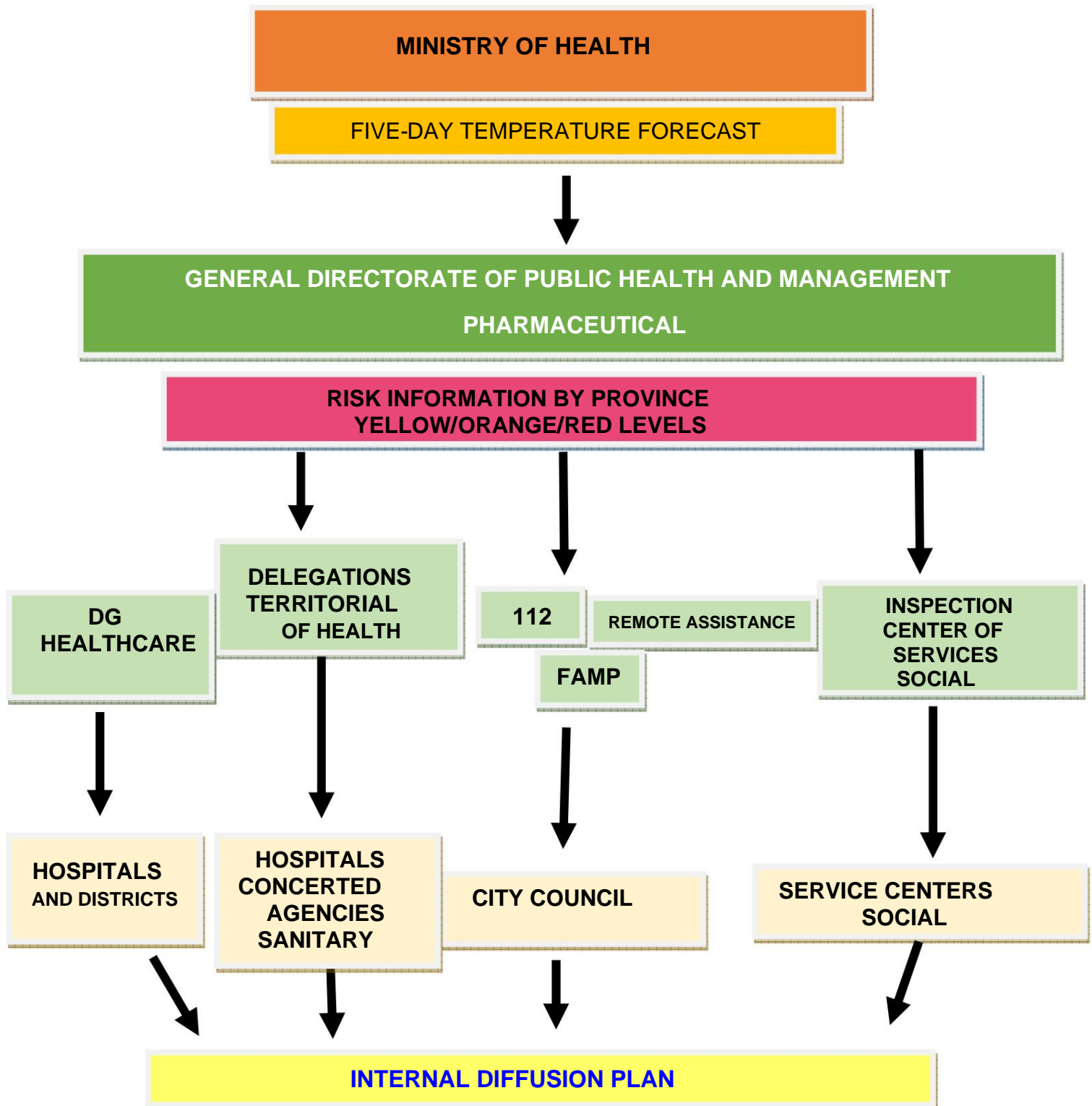
The Information Circuit of the alert or risk level is based on the daily information that the Ministry of Health sends, by email, to the General Directorate of Public Health and Pharmaceutical Regulation. The threshold levels of maximum and minimum temperatures by province are received daily, as well as the forecast from the State Meteorological Agency for the current day and the following four days.

With this information, a provincialized table is prepared with the risk levels, which will be sent daily to the institutions involved, and which have already had a first preparatory meeting of the Plan:

- Health and Family Counseling.
 - o General Directorate of Public Health and Pharmaceutical Regulation.
 - Surveillance and Occupational Health Service.
 - Health Protection Service.
 - o Health Emergency Center 061. o Salud Responde.
- Department of Equality, Social Policies and Conciliation.
 - o Central Inspection of Social Services.
 - o Agency of Social Services and Dependency of Andalusia.
 - Andalusian Telecare Service.
- Andalusian Health Service
 - o General Directorate of Health Care and Health Results.
- Ministry of the Presidency, Public Administration and Interior.
 - o Emergencies 112.
- Andalusian Federation of Municipalities and Provinces.

In each of the different welfare or social centers in the province affected, an internal information plan will be launched, which includes the measures of action that have been agreed upon at the local level to avoid worsening of pathologies due to high temperatures.

**Table I. ALERT COMMUNICATION CIRCUIT BY WAVE OF
HEAT**



ACTIONS ACCORDING TO ALERT LEVEL LEVEL O (GREEN): NO RISK

From June 1 to September 15:

1. Temperature levels will be monitored with the information provided by the State Meteorological Agency.
2. Preventive information actions will be carried out:
 - General population: Through the media, social networks and distribution of brochures on preventive measures in health centers.
 - Risk population: Information brochure and preventive measures for people over 65 years of age in Andalusia. This brochure will also be distributed in health and social services centers, including residential centers, day centers, sheltered housing and active participation centers.
 - Health and social services professionals: Referral of information on use and conservation of medications, preventive measures, and safety protocols attendance.
3. The censuses of the most vulnerable social groups will be updated to facilitate the intervention when necessary, and the recruitment of elderly people at risk will be carried out confined to the home.
4. Identification of **risk population**. During the months of May, June, July, August and September, is carried out from Primary Care, the recruitment and assessment of people at risk by Nurse Case Managers and Nurses of Family, for subsequent monitoring in their homes and inclusion in the Plan of Prevention and Intervention in Extreme Temperatures (Telephone Monitoring by Health Responds).
5. From the hospital, the proactive telephone follow-up plan continues for **fragile patients** who are discharged from the hospitalization units during all weekends of the year, holidays and eves. The record will indicate whether you take any drug from the risk medication groups such as: diuretics, hypotensives, antidepressants, neuroleptics and antiparkinsonian drugs, for subsequent evaluation by the Family Nurse or Case Manager Nurse and its possible inclusion in the Telephone follow-up of the Extreme Temperature Plan by Salud Responde.

LEVEL 1 (YELLOW): LOW RISK

The actions planned for this level will be activated from the first day in that the temperature threshold set for the province is exceeded.

They will be adopted by the General Directorate of Public Health and Planning Pharmaceutical, immediate alert measures through the circuit included in the table I, to all the Institutions involved, and notice will be given to the population and disseminated in media.

Health care services and social services will be informed of the risks of the heat wave. Reports will be prepared on the existing situation at all times. on the impact of temperature on morbidity and mortality.

Information and advice will be monitored from Salud Responde, all people identified and included by family nurses and/or managers of cases in the Prevention and Intervention Plan for extreme temperatures (telephone follow-up carried out by Salud Responde). This monitoring will be carried out through at least one phone call.

When alert level 1 (Yellow) is activated subsequently, that is, the alert information arrives the day after checking the observed temperatures, the protocol of calls made by Salud Responde will begin to assess the situation of the patients included in the Prevention and Intervention Plan extreme temperatures (Salud Responde telephone follow-up).

LEVEL 2 (ORANGE): MEDIUM RISK

The actions planned for this level will be activated from the third day (inclusive) on which the temperature threshold set for the province is exceeded.

Intensification of information about the meaning of the level, and the issuance of advice to the at-risk population.

Health care services and social services will be informed of the risks of the heat wave. Reports will be prepared on the existing situation at all times. on the impact of temperature on morbidity and mortality.

Immediate alert measures will be adopted by the General Directorate of Public Health and Pharmaceutical Regulation through the circuit included in the table.

1, to all the Institutions involved, and notice will be given to the population and disseminated in media.

It will be launched, in collaboration with the rest of the Institutions, the monitoring and control of people at risk, by the liaison and family nurses of Andalusian health centers, alerting them of the situation, and informing them of the preventive measures.

Proactive monitoring will be carried out by Salud Responde of all people identified and included by family nurses or case managers in the Prevention and Intervention Plan for extreme temperatures (telephone monitoring carried out by Salud Responde). Said monitoring will consist of, at least, a telephone call to the at-risk population of the province on orange alert, which will be made during the days that said alert lasts.

LEVEL 3 (RED): HIGH RISK

The actions planned for this level will be activated from the fifth day (inclusive) on which the temperature threshold set for the province is exceeded.

Action will be taken as set out in Table II.

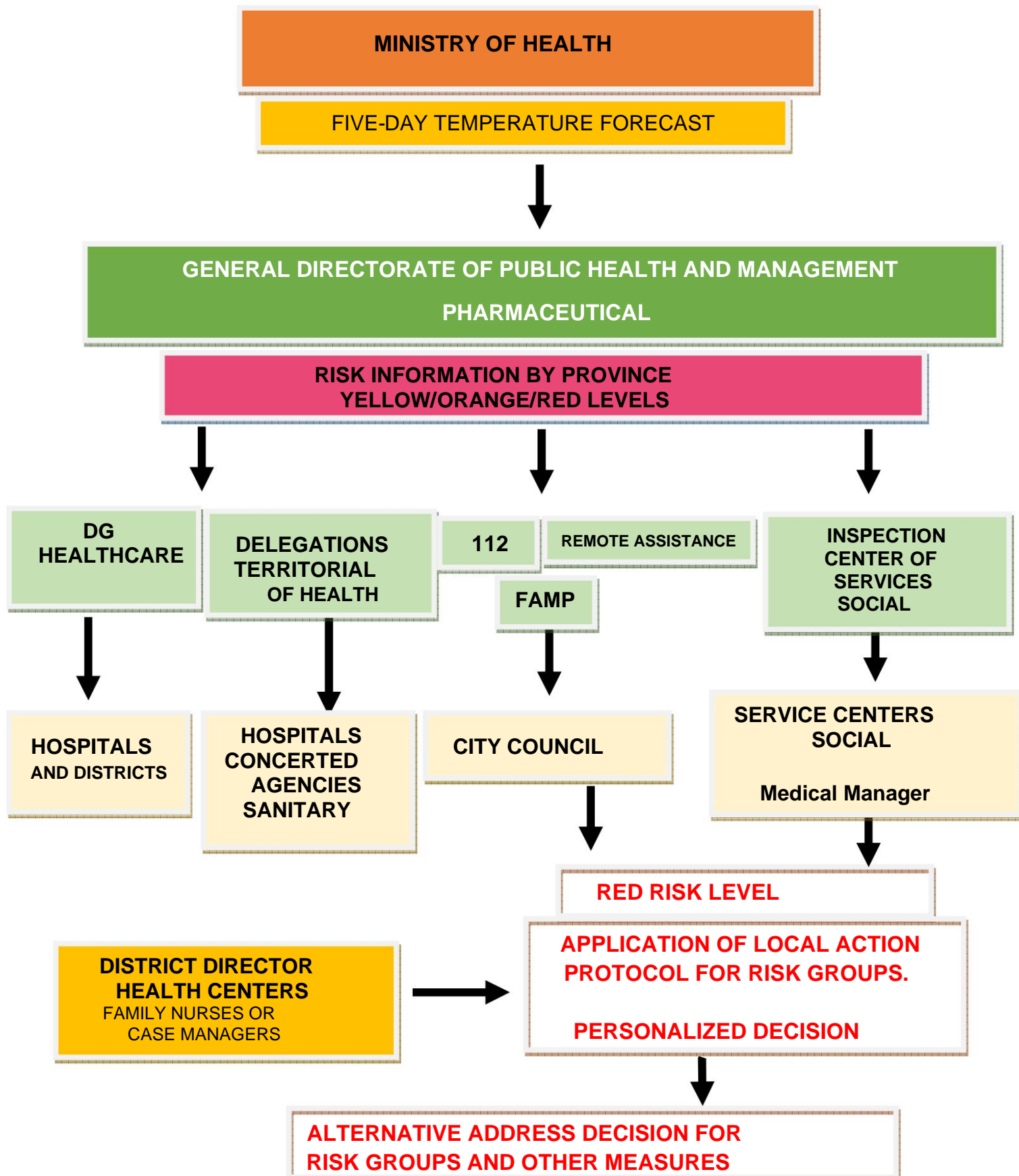
Fundamentally, the measures at this alert level consist of:

- The population will be notified and the situation will be disseminated in the media. of the alert.
- The preventive measures to be followed will be disseminated through the established channels. and agreed upon with the different Institutions.
- Health services will be reinforced, both hospital and care primary school, as stated in the SAS High Frequency Plan.
- Proactive monitoring will be carried out by Salud Responde of all the people identified and included by family nurses or health care managers cases in the SAS telecontinuity application. Said monitoring will consist of, least one call, to the target population of the province on red alert, which will be carried out during the days that said alert lasts.
- A local intervention plan will be launched, in which, in a manner Coordinated between health centers, city councils and civil protection, people at risk susceptible to temporary transfer from their home to centers or premises acclimatized for heat will be identified, during daylight hours. that are necessary.



Junta de Andalucía

**Table II. HEAT WAVE- ANTE DECISION CIRCUIT
RISK LEVELS.**



CIRCUIT FOR COLLECTION OF INFORMATION ABOUT MORBIDITY AND MORTALITY

The Notification Circuit is part of the Surveillance System set up, expressly, for monitoring the health effects of excess temperatures.

It consists of information on morbidity and mortality produced directly by heat, or pathologies aggravated by excess temperature, as well as information on the number of emergencies attended per day by the different centers of the System Public Sanitary of Andalusia.

Upon notification of detected morbidity or mortality, the General Directorate of Public Health and Pharmaceutical Regulation may propose carrying out an investigation by the epidemiological surveillance network, through an individualized survey, which allows knowing the personal characteristics and triggering circumstances. This survey will be attached to the alert sheet recorded in the Integrated Alert System application (one alert will be generated per province for the period from June 1 to September 15) which will collect all the relevant information regarding the Plan, provided by the surveillance network, the Andalusian Health Service and other Organizations.

INFORMATION CIRCUIT

ORGANISM	INFORMATION TO SUPPLY	PERIODICITY	ADDRESSEE
DG PUBLIC HEALTH AND ORDERING PHARMACEUTICAL	TEMPERATURES AND ALERTS	LEVEL 0 (GREEN) WEEKLY LEVEL 1, 2 AND 3 (YELLOW, ORANGE AND RED): DIARY	ALL ORGANISMS
HOSPITALS AND CENTERS OF SSPA HEALTH	ASSISTED PATHOLOGIES AND DEATHS. EMERGENCY ACTIVITY DATA		ANDALUSIAN SERVICE OF HEALTH
061	ASSISTED PATHOLOGIES AND DEATHS. EMERGENCY ACTIVITY DATA		
HOSPITALS CONCERTED	ASSISTED PATHOLOGIES AND DEATHS. EMERGENCY ACTIVITY DATA		DELEGATION TERRITORIAL OF HEALTH
AGENCIES SANITARY	ASSISTED PATHOLOGIES AND DEATHS. EMERGENCY ACTIVITY DATA		
SURVEILLANCE NETWORK	INDIVIDUALIZED SURVEY	ON DEMAND OF DGSPyOF	DGSPyOF
DGSPyOF	SUMMARY REPORT	BIWEEKLY	ALL ORGANISMS

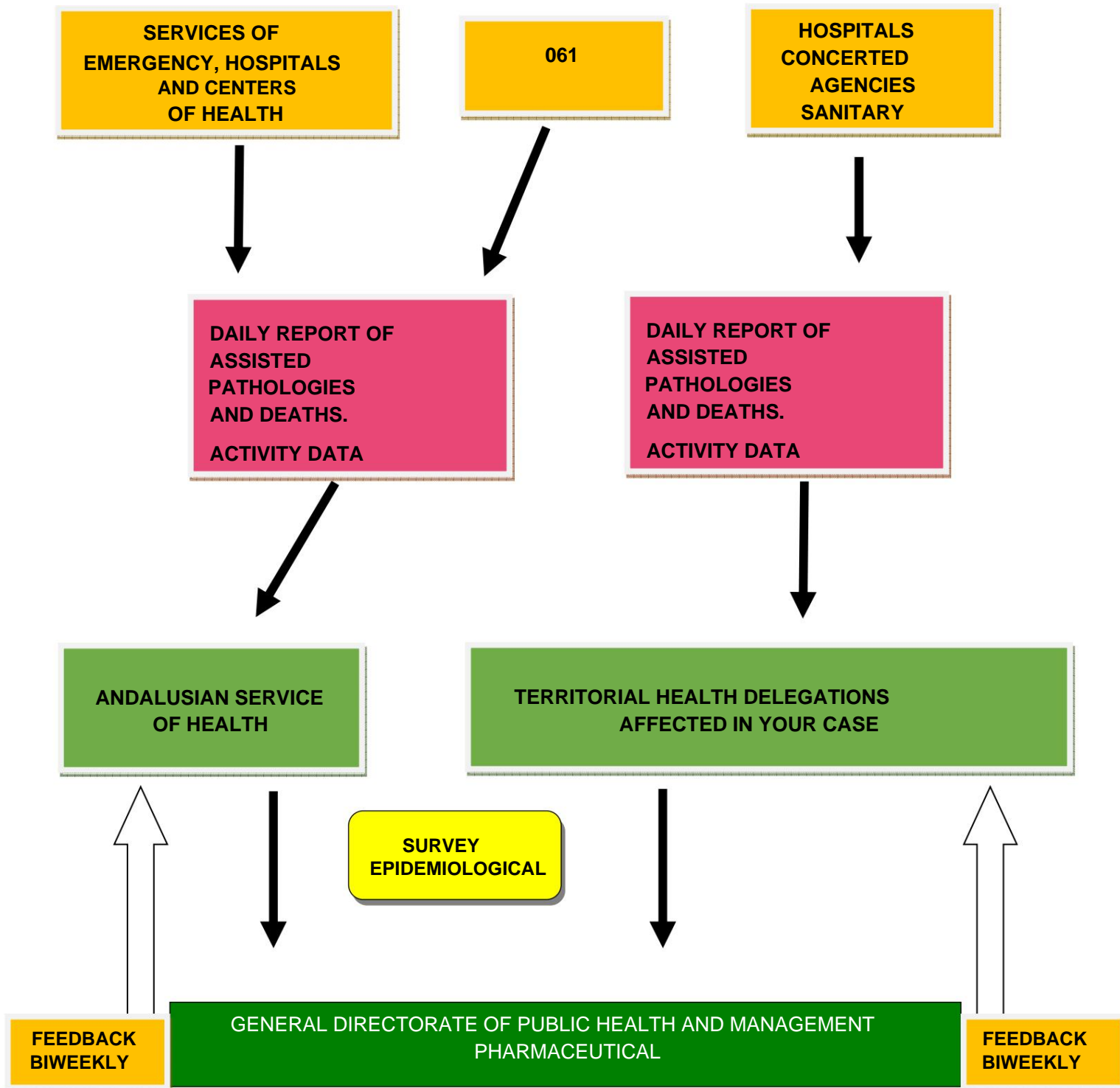
The circuit to follow is the one shown in Table III of the document.



Junta de Andalucía

ANDALUSIAN PLAN FOR THE PREVENTION OF THE EFFECTS
OF EXCESSIVE TEMPERATURES ON HEALTH 2021

**Table III. HEAT WAVE. CIRCUIT FOR THE COLLECTION OF
INFORMATION ON THE HEALTH EFFECTS OF DISCHARGES
TEMPERATURES**



COMMUNICATION PLAN ON HEAT WAVE

Introduction

As is already being done in Andalusia through the General Directorate of Public Health and Pharmaceutical Regulation in previous summer periods, it is recommended an informative action on the characteristic health effects of this period, this year being more important as the present Plan of Prevention in progress, so that information will be produced from the different Organizations involved, whether the recipients are the general population, health professionals, social professionals or emergency the services.

In Andalusia, due to tourism, there is a greater volume of population, which makes It is necessary to promote a series of health activities, such as surveillance epidemiology of communicable diseases, including some with greater incidence in this period: epidemic outbreaks of food poisoning infections, outbreaks of water-borne diseases, legionellosis associated with establishments hospitality and special surveillance of imported diseases.

In relation to direct exposure to the sun and high temperatures, it was already reported prior to the increase in the incidence of skin cancer and the measures preventive measures to adopt. Also about the possibility of heat stroke and how to avoid it, taking into account that in our environment the population is relatively accustomed to taking measures against the incidence of high temperatures.

This year it is planned to reinforce this last line of communication, jointly with the Ministry of Health and other organizations of the Junta de Andalucía. Given the experience of last year's heat wave, it is planned to start some activities specific in the period June - October of this and future years.

1. Objective

Adequately inform about the general prevention measures that must be be adopted in the event of excessive temperatures.

Inform about the Prevention Plan and the actions it proposes.

2. Recipients of the Communication Plan.

- Organizations involved.

- General population, and within it especially the risk groups established.
- Health professionals.
- Social work professionals.
- Emergency professionals.
- Media.

3. Elements of the Plan.

Dissemination of the Joint Action Plan to the Organizations involved and Entities

local. Preparation: General Directorate of Public Health and Pharmaceutical Regulation.

Information on the action plan for the Media. Elaboration:

General Directorate of Public Health and Pharmaceutical Regulation and Press Office.

Argumentation and spokesperson criteria according to level in case of red alert. Elaboration:

General Directorate of Public Health and Pharmaceutical Regulation and Press Office.

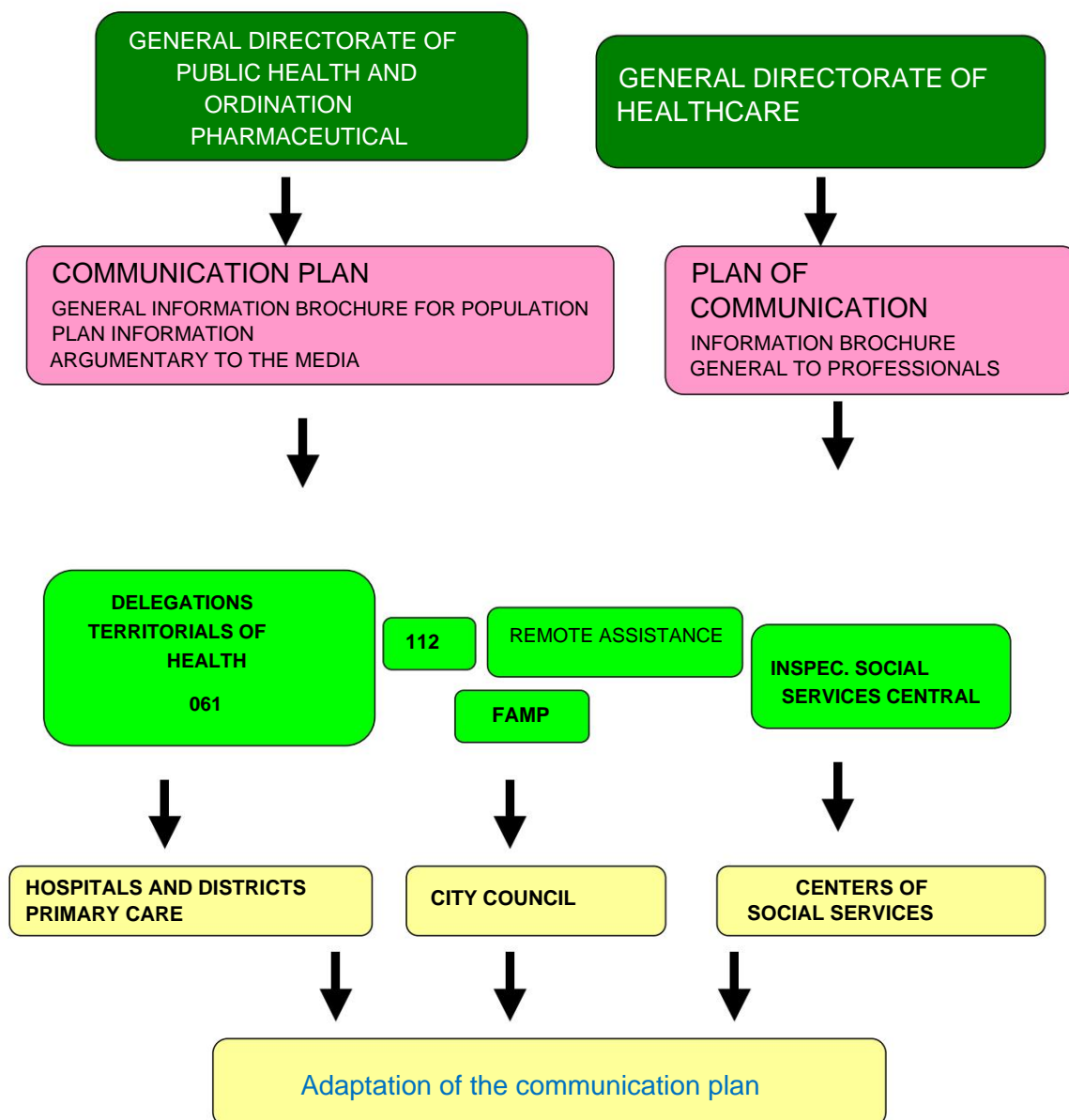
Information brochure for the general population and epidemiological surveillance network. Elaboration:

Ministry of Health and General Directorate of Public Health and Planning
Pharmacist.

Information brochure for health professionals. Preparation: DGAS of the SAS.

- Brochure for SAS professionals.
- Preparation of a Circular with information on the Plan and mandatory nature of the detection of associated morbidity and mortality and necessary information.
- Brochure adapted to staff of nursing homes and similar groups.

Table IV. HEAT WAVE. INFORMATION SYSTEM. Communication plan



SECTOR PLANS OF THE DIFFERENT ORGANISMS

I. ACTION PLAN OF THE CENTRAL INSPECTION OF SERVICES

SOCIAL

The Central Inspection of Social Services, in relation to preventive actions against the effects of excess temperatures on the health of older people sixty-five years old and other similar groups with a high risk index, will carry out the following actions:

1st.- Referral via e-mail to residential centers, sheltered housing, day centers for the elderly, active participation centers, people with disabilities, people with mental illness, child care centers and shelter centers for homeless marginalized people with the following documentation:

- Andalusian Plan for the prevention of the effects of excessive temperatures on health 2022.
- General guidelines for the preparation of the Internal Information Plan of the Social Services Centers.

2º.- Remission of daily information via e-mail to the centers above mentioned, of the forecast of the maximum and minimum temperatures, anticipated in 5 days, provided by the State Meteorological Agency through the Surveillance and Occupational Health Service of the General Directorate of Public Health and Pharmaceutical Regulation.

II. ACTION PLAN OF THE ANDALUSIAN FEDERATION OF MUNICIPALITIES AND PROVINCES

As a member institution of the Information Circuit of the ANDALUZ PLAN OF PREVENTION AGAINST THE EFFECTS OF EXCESSIVE TEMPERATURES ON HEALTH, is committed to:

- 1st.- Offer information to citizens through our website regarding recommendations and practical advice to face a possible heat wave
- 2º.- Referral via e-mail of information to the town councils

3º.- Coordinate with Service 112 of the Ministry of the Presidency, Administration Public and Interior contact with mayors when through the data, related to the temperatures, offered by the Ministry of Health, show that the Temperature limits are going to be exceeded, for which reason the Safety Plan must be activated. Emergency, especially during the month of August.

III. ACTION PLAN OF THE MINISTRY OF THE PRESIDENCY, PUBLIC ADMINISTRATION AND INTERIOR. GENERAL DIRECTORATE OF INTERIOR, EMERGENCIES AND CIVIL PROTECTION. DEPUTY DIRECTORATE OF EMERGENCIES

The Ministry of the Presidency, Public Administration and Interior, in relation to its competencies in the field of emergency management will direct their actions in the following lines:

1st.- Receive information from the Ministry of Health and Families about predictions related to heat wave episodes: temperature predictions and characterization of the level of intervention (0-1-2) that is appropriate in your case. This information will be referred to the regional emergency center 112 Andalucía (according to procedure specific).

2º.- Communicate to the City Councils the established predictions about possible risk situations (according to specific procedure). To this end, it will be put to available the Emergency 112 Andalusia system with its eight provincial centers and interconnections with municipalities.

3º.- Collaborate with the FAMP in informing the municipalities about the development of the present plan and their necessary participation in it.

4º.- Participate in the information campaign aimed at disseminating advice and self-protection measures. For this purpose, the network of local services will be available. civil protection and civil protection volunteering, which is distributed by more than 220 municipalities, as well as through social networks, since Emergencies Andalusia is present on Facebook and Twitter.

5º.- Collaborate with health services in intervention measures aimed at the transfer and reception of people at risk. The catalog of media related to this type of emergency will be updated and the connection mechanisms with the services of City Councils and Provincial Councils will be adapted.

**DISCHARGE PLAN
FREQUENTATION
"HIGH TEMPERATURES"
YEAR 2022**



Servicio Andaluz de Salud
CONSEJERÍA DE SALUD

**GENERAL DIRECTORATE OF HEALTH CARE AND
HEALTH RESULTS
ANDALUZIAN PLAN FOR URGENCIES AND
EMERGENCIES SUB-DIRECTORATE OF
MANAGEMENT AND EVALUATION OF HEALTH**

HIGH FREQUENTIAL PLAN

1. SITUATION ANALYSIS

Although the demand or attendance of emergencies maintains the current trend increase of 3.5% to 5.5% annually in Hospitals and a stabilization in Primary Care, the experience of previous years has shown that, during summer season, in relation to the high temperatures, there is an increase of activity, more marked in some provinces, with some relevant events, which could be summarized in:

- Moderate increase in attendance.
- Decompensation of chronic and/or persistent patients symptomatic.
- Increase in the average age of patients assisted.
- Moderate increase in the need to observe and admit patients in the hospital, in relation to the two previous factors.

Specifically, in 2021, from June 1 to September 15, the Ministry of Health and Families activated a heat wave alert on 57 days, at levels 1, 2 and 3, affecting five of the eight provinces of Andalusia. During the period of plan activation:

• The total number of emergencies treated in the hospitals of the Health System Public of Andalusia (SSPA) amounted to **1,179,857** of which **376** have corresponded to pathology aggravated by heat and **42** to heat stroke.

In short, due to high temperatures, the demand for global health care increases and not exactly the frequency of banal processes. The pathology considered "heat and light effects" (ICD-9 CM code 992) includes:

- Heat stroke and sunstroke.
- Heat syncope.
- Heat cramps.
- Heat exhaustion, anhydrotic.
- Heat exhaustion due to salt depletion.
- Unspecified heat exhaustion.
- Heat fatigue, temporary.

- Heat edema.

- Other specified effects of heat.
- Heat and light effects, not specified.

In addition to the pathologies mentioned, at this time there are also decompensation of chronic pathologies (ischemic heart disease; cardiac; chronic lung diseases, with or without OCFA, multi-pathological patients, etc.).

Of all this pathology, section 992.0 of the ICD9-CM has special relevance. corresponding to “Heat Stroke and Sunstroke” (they are not considered, therefore, Heat Stroke of Heat, sections 992.1 and following). Its diagnosis is established by verifying:

- Previous history of exposure to the sun or high temperatures.
- Clinical Data:
 - Fever ($> 39.5-40^{\circ}\text{C}$).
 - Anhidrosis: dry and hot skin (except in Active Heat Stroke, in which that there is profuse sweating, at least initially).
 - Alteration of the Level of Consciousness in its different degrees, up to the eat.
 - Other various findings or complications: Hypotension; Oliguria (in its varying degrees, up to anuria), Myalgias and Rhabdomyolysis; Elevation of the CPK; Multiorgan dysfunction.
- Absence of another pathology that justifies the symptoms.

All these events related to the heat wave are not accidental, but totally predictable, despite which, they frequently produce:

- Feeling of lack of control in the emergency room that, amplified from other areas of the hospital itself and from the media, is transmitted to the Citizenship as healthcare chaos.
- Saturation of Emergency Observation Areas.
- Alteration in the hospital's scheduled activity and relative disorder in the healthcare activity due to the presence of “ectopic patients”.
- Increase in demand for Primary Care Emergency and Critical Care Devices (DCCU), with an increase in urgent home notifications.

For all this, and in view of a possible heat wave for this year, it is necessary to prepare a operational plan that includes actions in the Emergency Section itself and in the of the Hospital, which is supervised and approved by the Hospital's Management Team and other participation bodies, respond to the situations described. And another of the Critical Care and Emergency Devices with your entire Health Center, that is supervised and approved by the District Management Team. That's it A Plan for interrelation and integration of the Hospital with the District is essential, since many measures are based on this relationship, as well as with the Teams of Area emergencies.

This High Frequency Plan related to the pathology caused by extreme heat ("heat wave") is incardinated with the **"Plan of Preventive Actions against the Effects of Excessive Temperatures on Health"** of the Ministry of Health and is part of the general framework of the High Frequency Plan that the Andalusian Health Service has been applying it for several years and includes organizational measures that allow it to face the increase in demand, guaranteeing the quality of assistance.

2. PREPARATION OF THE PLAN.

The plan has a preventive phase, aimed at the population at risk (older people, children, people with chronic pathologies, multi-pathological patients and groups disadvantaged social groups) and a care phase, aimed at citizens in whom preventive measures have not been effective and in whom a protocolized action (ANNEX I) can improve health results.

The plan aims to have all the mechanisms prepared in sufficient time. necessary information and coordination to be able to prevent and reduce the effects negative effects that a heat wave could generate in the population. Therefore, the plan must be operational between June 1 and September 15.

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

1. If the number of days in which the predicted maximum and minimum temperature simultaneously exceeds the respective reference threshold values is **zero**, the index is “0”, the assigned level is called “**LEVEL 0**” (**or absence of risk**), and 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 with the **color yellow**.
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**.

2.1 Hospital

The design must take into account actions at two levels: the Emergency Section and other Hospital Services.

The internal plan of the Emergency Section must be prepared by the Head of the Critical Care and Emergency Service, as well as known by all its members and approved by Management. Action throughout the hospital should be led by the Hospital Management, with the participation and commitment of the Service. of Critical Care and Emergencies and those medical and surgical services to which whose patients the Emergency Section provides care and stabilization in the first hours.

The plan, with these elements duly coordinated, must be reflected in a written document and in full operational capacity in the month of June.

2.2 Primary Care

The design must take into account the actions in the Care Device itself

Critical and Emergencies and in the Health Center itself.

The plan must be prepared by the District Management and subsequently known to all its members who may have a relationship with the aforementioned Plan.

All actions must be reflected in a written document and have full operational capacity in the month of June.

Along with the specific Hospital and District Plans, there must be a series of approved measures between these and 061, which must also be reflected and active on the same date as the Plan. It will be prepared by the Head(s) of the Critical Care and Emergency Service, the District Management and the Director of the Provincial Service of L 061 and subsequently approved by the Directors of the Hospital(s), District(s) and 061.

3. GENERAL ACTIONS

The actions to be carried out must have as a framework all health areas: the Hospital, the District and the Emergency Teams. They will consist of:

- Creation of the AP-Hospital-061 commission for the preparation and monitoring set of the High Frequency Plan.
- Consensus between Health Centers/DCCU/Critical Care Services and Hospital Emergencies/061 in the action protocols for the processes more common in seasonal peaks.
- Coordination with the hospital of referrals from 061-DCCU and health care units. home hospitalization.
- Telephone consultation with the hospital from the CS/DCCU in cases where raises a referral and is not included in the protocol, or for clarification of diagnostic-therapeutic doubts.
- Coordination, through the provincial coordinating center, of hospital discharges for follow-up by the CS/DCCU, according to schedule.

4. ACTIONS IN THE HOSPITAL

4.1 Actions at the SCCU

The fundamental objective of the actions to be contemplated in the SCCU is to address to the patient with due guarantees without exceeding the resources allocated to their attention. This involves: a) the definition of resources; b) the use of clinical practice guidelines, and c) the increase in resolution capacity.

4.1.A. Definition of Resources.

Personnel resources, observation beds and chairs must be well defined, both on a regular basis and possible expansions.

4.1.B. Use of Clinical Practice Guides.

The Clinical Practice Guides of the Service must be promoted, with the approval of the Management, achieving absolute compliance by all personnel assigned to Emergency Services.

Clinical Practice Guides must be prepared, if they do not exist, so that they are operational in the month of June.

4.1.C. Increased Resolution Capacity.

The increase in resolution capacity implies, on the one hand, an income rate more adjusted in Observation and in the Hospital and, on the other, keeping the patient essential time in observation. The highest resolution rate could be achieved with the following actions:

- Increase in the number of consultations and specialization of some of them, depending on the prevalent pathology, for faster discharges from Observation.
- Flexibility of the Observation Area-Seats.

- Reduction in decision times for intermediate and final destinations in patients admitted to Observation.
- Optimal use of other hospital resources such as Home Hospitalization, Preferred Consultations, Day Hospital, Ambulatory major surgery.
- Increased coordination and collaboration with Safety Devices Critical Care and Emergencies in the area.
- Duplication of Level 3 and 4 consultations and reconversion of the Consultations from Specialties to Emergency Consultations.
- Duplication of the Triage Area.
- Adequate coverage of incidents in the Emergency Department staff.
- Expansion of the space intended for Observation.
- Observation support, in the morning (or other longer hours demand), by the Intensivist Doctors.
- Non-use of Observation as a pre-entry zone.
- Strengthening the management of the ambulance network scheduled for facilitate discharges from the emergency room and the hospital itself.
- Early identification of social problems for early addressing by Social Work Unit.
- Issuance of prescriptions from Emergencies, to avoid unnecessary consultations in Primary Care.
- Discharge planning. Coordination with primary care.

All these actions must be sufficiently explicit and agreed upon. with the members of the Emergency Section.

4.2 Actions throughout the Hospital

Accepting that in the aforementioned period a quantitative change occurs, but Also, and fundamentally, an increase in demand for hospital care in some specialties of the Medical Area and Internal Medicine itself is not logical. that the hospital ignores the problem. Furthermore, previous experiences in some centers in Andalusia have shown that when the hospital responds as Overall, the results are better.

The actions, which should be coordinated by the hospital management, would happen

by:

- Creation of a commission in which all services affected by the increase in demand participate, in addition to the Critical Care and Emergency Service.
This commission will prepare, disseminate and evaluate the effectiveness of the plan.
- Reassignment, by the Hospital Management, with the participation of the Optional Board, of beds within the affected center, due to the demand and efficiency, measured in average stay per DRG of each Service.
- Expansion of the hospitalization area.
- Suspension of scheduled surgery for high-risk situations increments.
- Suspension of scheduled admissions.
- Boosting income for CMA on the same day of the intervention or, at least, maximum reduction in unnecessary surgical waiting.
- Commitment of the different services to reduce average stays, making hospital discharge criteria more flexible. Medical services must be capable of managing their occupancy peaks.
- Appointment of a person in charge, in each service, in charge of informing the Emergency Department about the foreseeable availability of beds, with early communication of said beds and streamlining their availability.
First thing in the morning, I transfer discharged patients to waiting rooms or others.
- Shortening waiting times for hospitalized patients, decision-making scans, such as radiology, ultrasound, endoscopy, etc.
- Discharge of stable patients pending additional tests or report definitive discharge.
- Registrations on Fridays, Saturdays, Sundays, holidays and the eve of holidays: Capture by part of the nurses for the Telecontinuity of Care Plan through Telephone follow-up of patients discharged from hospitalization units carried out by Salud Responde.
- Use of collective ambulances to speed up discharges.
- Planning discharge times with the ambulance service to know bed availability schedules.
- Reinforcement of Radiology and Laboratory; with prioritization of the requested tests from the emergency room.
- Income adequacy studies.
- Increase in the daily number of preferential consultations for patients

referred from the hospital's Emergency Section.

- Information and awareness among citizens about the situation and the beginning of epidemiological outbreaks, in order for them to assume possible delays.
care of banal processes and to turn to other devices for their
process, based on the level of severity and the services available.
- Use of the Emergency Report-Clinical History as a communication instrument
between Primary Care, the DCCU and the Hospital.
- Putting into operation, if possible, the reception of samples and the
Integrated emergency laboratory.
- Identification of the census of Assisted Residences, Residences of people
nursing homes and other centers that care for acute patients.
- Coordination with 061 and establishment of access routes that do not block the
emergency circuits, during periods of maximum demand.

4.3 Actions in other areas related to the Hospital

Likewise, from the Hospital, actions must be launched aimed at:

- Increase in the supply of beds from other institutions for patients with
socio-sanitary problems, long-stay, in a vegetative state, or who
They only require palliative care.
- Coordination with the Medical Unit of the Chronic Hospital, in case of
exist, for the direct referral of patients diagnosed and treated
with unbalanced processes.
- Communication from the Chronic Hospitals, of the bed census
Available first thing every day.
- Transfer to Regional Hospitals and Assisted Residences of the
need to increase your response to higher levels of severity in
the Emergencies.

5. PHASES OF IMPLEMENTATION OF THE PLAN IN THE HOSPITAL

The phases of application of the Plan in the Hospital are based on two general criteria:

- Percentage increase in the number of emergencies that come to the hospital.
- Percentage increase in the number of patients who are in

observation and are awaiting admission to the hospital.

PHASE I

1. When the number of patients who come to the hospital emergency room does not exceeds 10% increase.
2. When the number of patients who are under Observation pending admission to the hospital does not exceed a 10% increase.

In this situation no extraordinary resources will be used, but the High Frequency Plan planned with the planned Monitoring Commission.

PHASE II

1. When the number of patients who come to the hospital's emergency room is is between 11% and 25% increase.
2. When the number of patients who are under Observation pending admission to the hospital is between 11% and 25% of increase.

In this situation, together with the implementation to the maximum of all the measures of the High Frequency Plan, you must:

- Analyze human resources, adapted to the time slots of greater frequency, both in Emergency Consultations and in Observation.
- Increase the availability of beds by the different Services (decrease in average stays, etc.)

PHASE III

1. When the number of patients who go to the hospital emergency room exceeds 25% increase.
2. When the number of patients who are under Observation pending admission to the hospital exceeds a 25% increase.

The entire hospital must be turned intensively to correct the situation. In this situation, along with the implementation, to the maximum, of all the measures of the Plan of High Frequency, you must:

- Analyze human resources based on increases both in Emergency Consultations and in Observation.
- Increase the availability of beds significantly by

of the different Services (decrease in average stays, scheduled activity, etc.).

6. ACTIONS IN PRIMARY CARE

6.1 General Measures

- Preparation in the District of the High Frequency Emergency Plan for Health Centers (CS) and Critical Care and Emergency Devices (DCCU).
- Creation of the AP-Hospital-061 commission for the preparation and monitoring set of the High Frequency Plan.
- Consensus between Health Centers/DCCU/Critical Care Services and Hospital Emergencies in the action protocols for the most common in seasonal peaks.

6.2 Dissemination to the Population

- Inform the population of the location, schedules and equipment of the different Health Centers/Critical Care and Emergency Devices.
- Inform about the rational use of healthcare resources.
- Dissemination, through social media, of health advice on the pathologies that produce increases in demand.

6.3 Coordination

- Coordination of referrals from 061-DCCU and hospitalization units home.
- Telephone consultation with the hospital from the CS/DCCU in cases where raises a referral and is not included in the protocol, or to clarify doubts diagnostic-therapeutic.
- Coordination, through the provincial coordinating center, of hospital discharges for follow-up by the CS/DCCU, according to schedule.



- Increase the degree of resolution of the DCCU and decrease the referral to Hospital. Protocolization of the derivations.
- Use of short treatment rooms and evolution of DCCU type III (of high resolution), which act as a reference for types I and II (the rest of the Devices).

6.5 Home Actions

- Capture and classification according to the pre-established risk level of the population that meets the fragility criteria.
- Promote home visits, both by the doctor and the family nurse and case manager, health centers and DDCUs.
- Telephone follow-up by Salud Responde nurses of patients fragile risk II patients captured by family nurses and case managers and activation of the DCCUs, if applicable.
- Information about risk factors for patient caregivers frail and elderly people's residences.

7. PHASES OF IMPLEMENTATION OF THE PLAN IN PRIMARY CARE

The phases of application of the Plan in Primary Care are based on three criteria general:

- Percentage increase in the number of emergencies that come to the Health Center and Critical Care and Emergency Device.
- Percentage increase in the number of patients requesting care home or outside the Center.
- Percentage increase in the number of patients who are in the short treatment area (observation).

PHASE I

1. When the number of patients who come to the DCCU emergency room or to the Health Center does not exceed 10% increase.
2. When the number of patients requesting home care is not exceeds 10% increase.

3. When the number of patients in the ward

Short treatments do not exceed 10% increase.

In this situation no extraordinary resources will be used, but instead will apply the High Frequency Plan contemplated by the Commission of planned follow-up.

PHASE II

1. When the number of patients who come to the DCCU emergency room or Health Center is between 11% and 25% increase.
2. When the number of patients requesting home care is is between 11% and 25% increase.
3. When the number of patients in the short treatment room is between an 11% and a 20% increase.

In this situation, together with the maximum implementation of all the measures of the High Frequency Plan, the resources must be analyzed humans, considering the time slots of greatest frequency.

PHASE III

1. When the number of patients who come to the DCCU emergency room or Health Center exceeds a 25% increase.
2. When the number of patients requesting home care exceeds a 25% increase.
3. When the number of patients in the ward short treatments exceed a 25% increase.

The entire District must work intensively to correct the situation. Together with the implementation, to the maximum, of all the measures of the Discharge Plan Frequency, you must:

- Analyze human resources based on the increase in attendance at DCCU consultations.
- Increase the areas of care, both consultation and treatment short.

8. INFORMATION SYSTEM

To maintain monitoring of the incidence of the heat wave on the health of Andalusian citizens, a registration system is established, which will be in operation when it is communicated by the General Directorate of Health Assistance and Health results based on alert activation forecasts. The Data entry into this information system will be done in a web environment. The Hospital Managing Directors and District Directors, or persons in whom delegate, they will have the appropriate access codes to the system.

9. CONCLUSIONS

The final objective of activating the High Frequency Plan is to increase the quality of care for patients in emergency situations and their satisfaction.

ANNEX I. HEAT PATHOLOGY

INTRODUCTION

The pathology considered as “effects of heat and light” (ICD-9 CM code 992) includes:

- Heat stroke and sunstroke.
- Heat syncope.
- Heat cramps.
- Heat exhaustion, anhydrotic.
- Heat exhaustion due to salt depletion.
- Unspecified heat exhaustion.
- Heat fatigue, temporary.
- Heat edema.
- Other specified effects of heat.
- Heat and light effects, not specified.

In addition to the pathologies mentioned, as a consequence of sustained exposure to heat, decompensations of chronic pathologies also occur: heart disease ischemic; heart failure; chronic lung diseases with or without OCFA; patients pluripathological, etc.

Of all the specific pathology due to the “effect of heat and light”, in the face of a possible “wave of heat” it is especially necessary to consider sanitary measures (preventive and therapeutics) to be implemented for patients at risk of/affected by: 1) Heat Cramps; 2) Heat Exhaustion, and 3) Heat Stroke

1. HEAT CRAMPS

1.1. CLINICAL MANIFESTATIONS

Heat cramps occur in subjects who do intense, prolonged exercise, generally at high temperatures (athletes, soldiers, metalworkers, farmers, etc.), and sweat profusely, which is why they lose water and electrolytes (hence hemoconcentration is observed). and low levels of Na and Cl in blood and urine).

They manifest as painful, brief and intermittent contractures, which affect the most used muscle groups (they can even simulate an acute abdomen) and which

appear in the last part of the exercise or even several hours after finished the same. They are not accompanied by fever.

1.2. PREVENTION

Avoidance, if possible, of intense exercise during hours or in an environment of extreme heat.
Adequate intake of water and salt (isotonic drinks) before and during exercise.

1.3. TREATMENT

Treatment can and should be done on site. Includes:

1. Rest in a cool environment.
2. Hydroelectrolyte Replacement (HE): preferably through oral solutions with ClNa and ClK.

2. HEAT EXHAUSTION (COLLAPSE)

2.1 CLINICAL MANIFESTATIONS

Heat exhaustion is the most common condition of heat illness. It occurs due to water depletion (older people on diuretic treatment; subjects who drink little water), salt depletion (intense exercise, at high temperatures, in those who are not acclimatized) or mixed.

Weakness, Nausea-Vomiting, Anorexia,
Headache, Dizziness, Cramps and, less commonly, Anxiety, Irritability, Feeling of Fainting or even Syncope.

Pale and sweaty (sticky) skin is observed, with a normal temperature or somewhat elevated; orthostatic hypotension and tachycardia may occur.

The difference between severe heat exhaustion and heat stroke is sometimes difficult (both conditions share hypoperfusion, rhabdomyolysis and insufficiency renal) and represent different stages of the same process. The difference lies in the fact that in exhaustion thermoregulation is preserved, so

no temperature greater than 40°C appears, decreased level of consciousness or anhidrosis.

2.2. PREVENTION

Avoid exposing yourself to the sun at high temperatures (central hours of the day). To drink plenty of isotonic liquids. Rest in a cool environment (use air conditioning or fans). Wear light, light-colored clothing. Cool down with bath or shower with fresh water. Avoid intense exercise during hot hours or in hot environments extreme.

23. TREATMENT

Early treatment is essential to avoid worsening and even stroke. of heat. Initially, treatment consists of:

1. Rest in a cool environment.
2. HE replacement: through solutions with ClNa and ClK.

Depending on the patient's situation, the measures to be taken may be adopted in the patient's own home, in the Critical Care and Emergency Unit (DCCU) or the Basic Primary Care Team or in the Critical Care and Emergency Service of the hospital. reference: FIGURE 1.

Referral should be considered if any of the following criteria are met:

1. Social criterion: Patients who live alone, do not have the capacity to care to "Activities of Daily Living" and lack any family or social support. If this support exists (relatives who visit you daily, family nurses or care manager cases or family doctors), treatment may begin at home, if it is not verify any of the other criteria.
2. Inability to swallow.
3. Suspected heat stroke: temperature greater than 40°C, decreased level of consciousness or anhidrosis (dry, hot skin), in a subject exposed to high temperatures and without any other possible cause of the condition.

In the first two cases, in the DCCU, these patients will be monitored for a period of hours, to see its evolution when initially applying the treatment mentioned, to which HE replacement may be added via IV route and, in the event that the

DCCU allows for longer observation, including bladder catheterization and diuresis measurement.

The patient with suspected heat stroke should be treated in a Health Service.

Critical Care and Emergencies

3. HEAT STROKE

3.1. CONCEPT

It is a serious syndrome that occurs due to a failure of thermoregulation in the face of a thermal overload. The body fails to dissipate adequate amounts of heat, raising the temperature to more than 41° and causing multiple organ failure.

It is characterized by the triad: High fever, Alteration of Consciousness and Anhidrosis.

3.2. GUYS

There are two kinds:

1. Active or Exercise (endogenous thermal overload): due to exercise, in a hot and humid environment; with little hydration and excessive clothing (which prevents perspiration).

Almost always in young men (athletes - long-distance; cycling -, soldiers, manual workers - bricklayers, farmers, miners, metalworkers -). It can occur in environments tempered. It can be triggered by alcohol, coffee, fever or Acute Gastroenteritis.

2. Passive or Classic (exogenous thermal overload): more common in patients elderly, bedridden, alcoholics (9%), psychiatric patients and young children excessively warm, exposed to high temperatures and humid environments.

Favoring factors are:

- a) Taking Drugs (57%: Diuretics, Laxatives, Beta-blockers, Antihistamines, Anticholinergics, Antiparkinsonian, Antidepressants).
- b) Sick Neurological: Dementia (50%), Parkinson's (7%), Stroke,...

- c) Sick Cardiovascular: Ins. Cardiac (37%), others.
- d) Diabetes Mellitus (33%).
- e) Others: Obesity (25%); Hyperthyroidism; COPD (20%); Renal insufficiency
Chronicle; History of Heat Stroke (4%), etc.

3.3. CLINICAL MANIFESTATIONS

Heat Stroke is characterized by 1) Alteration of the Level of Consciousness; 2) Fever ($> 39.5-40^{\circ}\text{C}$), 3) Anhidrosis: dry and hot skin (except in Active Heat Stroke, in that there is profuse sweating, at least initially); 4) Exposure to heat; 5) Absence of other causes of fever.

Patients consult from the 3rd to the 6th day of the Heat Wave. The risk is high if an ambient temperature $>32-34^{\circ}\text{C}$ with relative humidity $>50-60\%$ is maintained for 48 hours. Cases are more numerous in the first days of the Heat Wave due to lack of acclimatization

Classic GC usually comes with "Heat Exhaustion" prodromes (not Active GC).

3.4. ANALYTICS

The analytical data are all nonspecific. It can be found: 1) Hyperglycemia (90%); 2) Increased Urea (86%); 3) Increased Osmolarity (80%); 4) Increase of CPK (74%); 5) Leukocytosis (65%).

3.5. FORECAST

Mortality figures are very variable (8-80%). They are Bad Prognostic Factors:

- Rectal temperature greater than 42°C .
- Defervescence time >1 hour.
- Age > 50 years.
- Severe Neurological Affectation: Coma $>2-4$ hours; Seizures; Injury Brainstem.
- Shock; Distress; CID; Lactic acidosis; GOT >1000 ; HyperK; Renal insufficiency Sharp.

3.6. DIFFERENTIAL DIAGNOSIS

It must be done with: 1) Other Hyperthermias; 2) Infections: Sepsis; Meningitis; Leptospirosis; 3) CNS Lesions: Hypothalamic Hemorrhage; acute hydrocephalus; Seizures; 4) Endocrinopathies: Thyroid Storm; Pheochromocytoma; 5) Delirium Tremens.

3.7. PREVENTION

People at risk should consider several measures: Avoid exposure to sun at high temperatures (central hours of the day). Increase fluid intake, preferably isotonic. Reduce exercise and rest, if possible, in areas where shade and ventilated. Wear light, light-colored clothing. Use Air Conditioning or, failing that, Fans in homes. Refresh yourself with baths or showers fresh water.

3.8. TREATMENT

Treatment of GC (suspected or confirmed) should be in-hospital and, in the case of active GC, begins with placement in the shade and undressing, even before transfer.

In the hospital, the following measures should be considered (to a greater or lesser extent depending on the severity of the case: its evolution and complications).

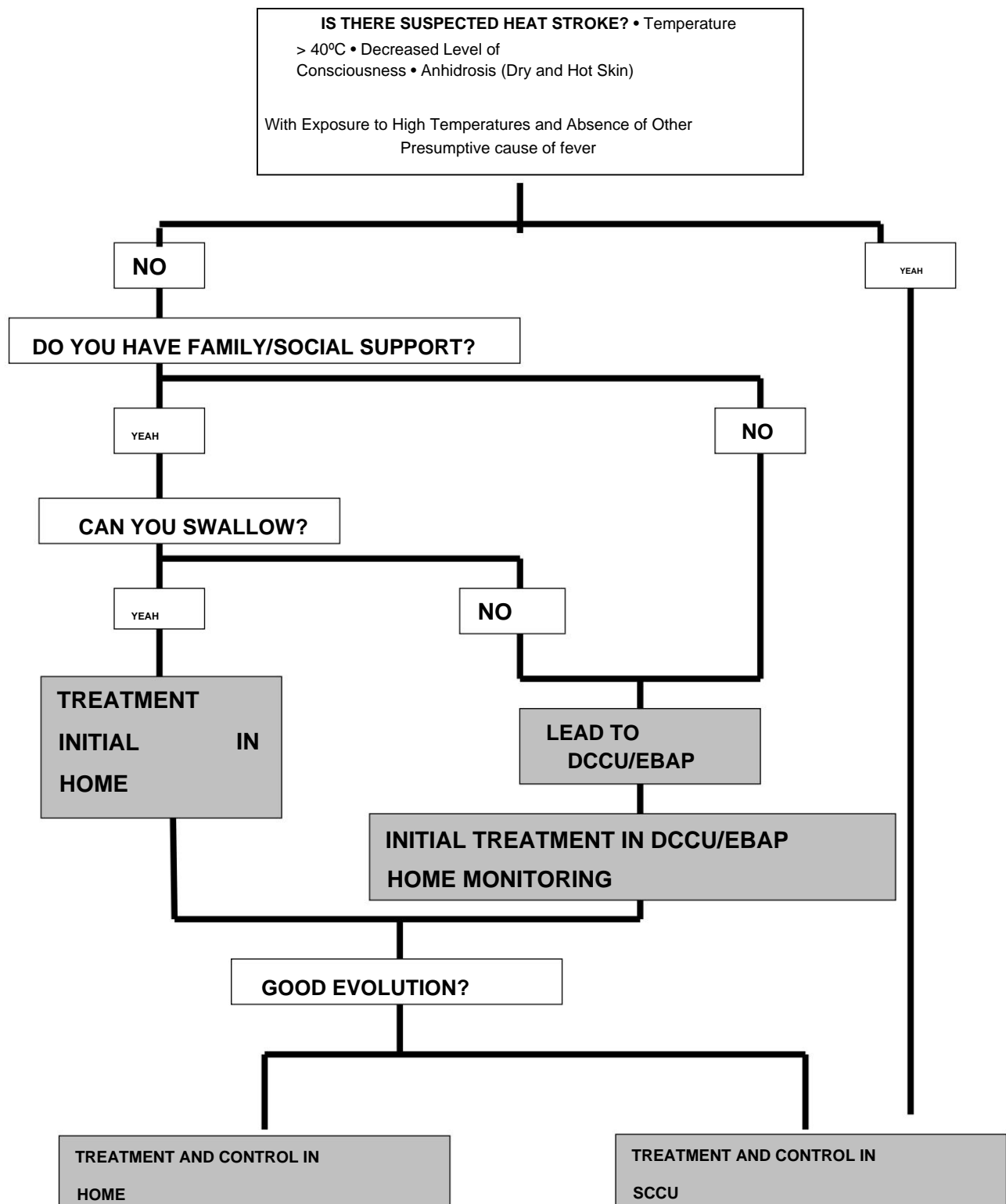
1. Ensure, where appropriate, Life Support.
2. Immediately start cooling by physical methods: you must:
 - place the patient in lateral decubitus and in the fetal position.
 - apply cold compresses (preferably with ice) so continued; especially in the neck, armpits and groin.
 - use ventilators placed directly on the patient.
 - do not use antipyretics, especially NSAIDs.
3. Venous canalization.
4. Continuous monitoring of EKG and Sat O2.
5. Monitoring of Temperature, Blood Pressure and PVC (this, especially in the elderly); with rhythm dependent on the patient's condition.
6. Placement of Veterinary Catheter and determination of Hourly Diuresis.

7. Oxygen: in variable quantity depending on Sat O₂.
8. HE Replacement: Physiological Saline or Lactated Ringer's Solution, in an amount total that is usually around 3000-3500 cc/day, with a faster initial rhythm accelerated (250cc/hour).
9. Treatment of seizures: with Diazepam.
10. Treatment of chills: with Chlorpromazine.
11. Specific treatment of other complications.

The measures must be suspended when the temperature drops below 38.8°C.

Analytical controls should be carried out on: Blood biochemistry (glucose, urea, creatinine, Na, K, Cl, Ca, GOT, LDH and CPK); Arterial Gasometry; Study of Coagulation, and Elemental Urine.

FIGURE 1. MANAGEMENT OF HEAT PATHOLOGY





Servicio Andaluz de Salud
CONSEJERÍA DE SALUD

**RECOMMENDATIONS FOR RESIDENTIAL CENTERS
ELDERLY PEOPLE AND OTHER SIMILAR HIGH GROUPS
RISK (2022)**

Regional Directorate of Development and Innovation in Care
General Directorate of Health Care and Health Results



Junta de Andalucía

ANDALUSIAN PLAN FOR THE PREVENTION OF THE EFFECTS
OF EXCESSIVE TEMPERATURES ON HEALTH 2021

RECOMMENDATIONS FOR PEOPLE'S RESIDENTIAL CENTERS

ELDERLY AND OTHER SIMILAR HIGH RISK GROUPS:

1. Prevention and action when symptoms appear in
risk situations related to heat.
2. Prevention and action in an emergency situation
related to heat.
3. Precautions with the cold chain in medications and
food

1.- Prevention and action against the appearance of symptoms in situations of heat-related risks.

HEAT CRAMPS

Heat cramps usually affect people who sweat a lot when they practice intense physical activities. This sweat depletes salt and moisture from the body. Low salt levels in the muscles cause painful cramps. The Cramps can also be a symptom of heat exhaustion.

Symptoms:

• Muscle pain or spasms — usually in the abdomen, arms or legs — which may be associated with strenuous activity.

To do

- Have him stop all activity and sit him calmly in a cool place.
- Let him drink juices or a sports drink.
- You should not resume activity for a few hours after cramps ceased, because additional effort can lead to exhaustion due to heat or sunstroke.

If with the above measures the cramps do not subside within 1 hour, call and inform the doctor.

HEAT RASH

Heat rash is a skin irritation caused by excessive sweating. hot and humid climate. It can occur at any age but is more common among Small children.

Symptoms:

• Red skin with pimples or small blisters. It is more likely to appear on the neck, upper chest, groin, under the breasts and the back inside of the elbows.

To do:

The best treatment is to find a cooler, less humid place.

Keep the affected part dry. You can use natural fabric like a piece of sheet, or talcum powder, being careful not to get plastered. Try to avoid ointments or creams because they conserve heat and moisture in the skin and can make the situation worse.

The treatment is simple and generally does not require medical attention.

SOLAR ERYTHEMA

Erythema or sunburn should be avoided because it damages the skin. Although in general it produces little discomfort and often heals in about a week, a more severe erythema may require medical attention.

Symptoms:

• The skin becomes red, sore, and abnormally hot after exposure to sun.

To do

- You should avoid repeated exposure to the sun.
- Apply cold compresses or soak the affected part in cold water.
- Apply moisturizing lotion to the affected parts. Do not use balms, nor ointments.
- Do not burst or empty blisters.

• **2.- Prevention and action in the event of an emergency situation related to heat**

INSOLATION / HEAT STROKE

Heatstroke occurs when the body cannot control its temperature:

body temperature rises rapidly, the sweat mechanism fails and the body loses the ability to cool down. Body temperature can reach up to 41°C or more in 10 to 15 minutes. Heatstroke can cause death or permanent disability if emergency treatment is not provided.

Symptoms:

• very high body temperature (over 39°C, orally)

• red, hot, dry skin (no sweat)

• pulse rapid and stronger than normal

• throbbing headache

• dizziness

• nausea

• confusion

• loss of consciousness

To do:

If you notice any of these symptoms, it may be an emergency. Have someone call for immediate medical help while you begin to cool the person affected. Do the following:

- Take the affected person to a shaded area.
- Cool the affected person quickly using any method available. For example: immerse the person in a bathtub of cold water;

under a cold shower; Spray it with cold water from a garden hose;

use a sponge wet with cold water; or, if humidity is low, wrap

the affected person with a wet sheet and fan them vigorously.

- Monitor body temperature and continue trying to lower the temperature until 38.3- 38.9°C.
- Get medical help as soon as possible. Notify Emergency Service or Emergency Coordination Center according to the situation

Sometimes the affected person's muscles contract involuntarily.

as a result of sunstroke. If this happens, try not to let the person get hurt.

but do not put any object in his mouth or give him anything to drink. If he vomits, place him on side to keep the airways clear.

HEAT EXHAUSTION

Heat exhaustion is the body's response to excessive loss of water and salt contained in sweat. Those most prone to heat exhaustion are elderly and people suffering from high blood pressure.

Symptoms:

• copious sweat

• paleness

• muscle cramps

• tiredness

• weakness

• dizziness

• headache

• nausea or vomiting

• fainting

• warm, moist skin

• fast and weak pulse

• rapid, shallow breathing.

To do

Help the affected person cool down

Cooling measures that may be effective include:

following:

- Fresh, non-alcoholic drinks
- Rest
- Shower, bath or sponge bath or with cold cloths
- An air-conditioned environment
- Light clothes

If heat exhaustion is not treated, it can degenerate into heatstroke. Call and

Tell your doctor if symptoms worsen or last more than 1 hour.

3. Precautions with the cold chain in medicines and food

CONSERVATION OF MEDICINES IN CASE OF A HEAT WAVE

For those medications that require specific conditions of conservation:

- Medications to be stored between +2 and +8°C: Conservation is carried out usually in refrigerators. The medicine must be removed from the refrigerator a few minutes before use. In case of high heat, it is recommended to use them quickly once they come out of the refrigerator.
- Medications that require a temperature below 25 or 30°C: Not necessary maintain special measures, except normal ones.
 - Normality being understood as the maintenance of the drug within the packaging, and this in a closed storage place not exposed to the sun.
- For medications that can be stored at room temperature:

It is not necessary to maintain special measures, except normal ones.

Normality being understood as the maintenance of the drug within the packaging, and this in a closed storage place not exposed to the sun.

Particular cases:

- Some pharmaceutical presentations (suppositories, suppositories, creams...) are quite sensitive to temperature rises. When we open it, its appearance will indicate its validity. Any product whose external appearance has been modified must not be consumed.
- In case of transport, medicines to be stored between +2 and +8°C must be transported in conditions that respect the cold chain (isothermal container refrigerated) but without causing freezing. The rest of the medications should not being exposed to high temperatures for a long time, such as inside a car. It is advisable to transport them in a non-refrigerated isothermal container.
- In cases of storage of medicines in solution, appropriate appropriate storage conditions (isothermal containers) or proceed regularly to its replacement.

CONDITIONS OF STORAGE AND CONSUMPTION OF FOOD

Safe household behaviors to maintain the cold chain

They will depend on the location:

At the distribution site:

- Buy refrigerated and frozen products at the end of the purchase.
- Use isothermal bags.
- Place quickly in the refrigerator or freezer upon arrival at the residence.

In the residence:

- Limit the time that separates the purchase from the preparation of food, and the preparation for consumption, refrigeration or freezing.
- Place food in the refrigerator according to the refrigerated compartments and food categories. It is advisable to respect the three cold zones of the refrigerator, the zone from 6 to 10°C (butter, eggs, industrial sauces, fruits and fresh legumes, cured cheeses); the zone from 4 to 6°C (dairy products, fresh cheeses, cooked legumes and fruits, cakes) and the temperature zone below 4°C (fish, meat, charcuterie...).
- Defrosting will be carried out in refrigeration. Thawed products are
They will be cooked immediately or kept refrigerated for an adequate time that avoid alteration of them. Under no circumstances will food be refrozen thawed.
- Do not overload the refrigerator.
- Avoid frequent openings of the refrigerator.
- Maintain strict hygiene of the refrigerator, cleaning with soapy water and a
Rinse with bleach water or vinegar every 15 days.
- Respect the expiration date of food
- Observe the color and smell of food before preparing it, any changes constitutes an alarm signal.
- Limit exposure to room temperature of sensitive products,
placing them immediately in the refrigerator after use.

Storage temperatures

Conservation of prepared meals	Temperature
Frozen food	< or = -18°C
Refrigerated foods with a period of duration less than 24 hours	< or = 8°C
Refrigerated foods with a period of duration greater than 24 hours	< or = 4°C
hot meals	> or = 65°C

Effects of temperature on the main pathogenic microorganisms

Temperature Influence of temperature	
30-37°C	Growth of most organisms.
> 20°C	Development of toxins from staphylococci and Clostridium botulinum
10°C	The production of staphylococcus and Clostridium toxins is stopped
6-7°C	Growth of Salmonella, Bacillus cereus. Stops the growth of staphylococcus
4.5, 2°C	The growth of Salmonella is stopped. Listeria Growth
0-1°C	The danger linked to the growth of the main pathogenic microorganisms or the release of toxins disappears, but some adapted to the cold continue to grow (Listeria, Shigella, Yersinia)
-10°C	All bacterial growth stops. Yeast and fungal growth
-18°C	All microbial growth stops.

ACTION PLAN FACING EXTREME TEMPERATURES IN UNITS COMMUNITY MENTAL HEALTH

Strengthening the response capacity of health services to high temperatures becomes essential, once the association is known of heat with the increase in health problems in certain higher risk populations.

Since 2004, the Andalusian Health Service (SAS) has established various lines of work to effectively address problems of health that can arise from the high temperatures reached in summer on the most susceptible population.

The Action Plan for Extreme Temperatures has the following **objectives**:

1. Reduce the impact on health associated with increased temperatures summer and possible heat waves.
2. Establish a system of coordination and exchange of information between the institutions involved.
3. Focus preventive efforts on populations at risk of morbidity and mortality due to elevated temperatures, identifying them and establishing personalized follow-up with the existing resources.

These lines of work are structured within the Andalusian Prevention Plan against the Effects of Excessive Temperatures on the Health of the Health counseling.

These interventions are carried out in coordination with the teams of Primary and Hospital Care Nursing and with the Information Center and Responde Health Services.

From the Comprehensive Mental Health Plan and the Management of the Mental Health Strategy care plans **to expand this line of work starting in 2014**

integrating in this Plan the professionals of the Units of Community Mental Health (USMC)

Andalusian Prevention Plan against the Effects of Excessive Temperatures on Health: Patient Inclusion TMG

Within the framework of the Extreme Temperatures Plan, it is necessary to emphasize that ALL patients with SMI, with or without a defined risk level previously, they must be followed more intensively by the management team. Nursing when there is an alert due to high temperatures, due to the needs of care derived from their mental and/or physical pathology, so they must be recipients of:

- o Tips to avoid and control heat, aimed at the patient and their family or formal caregivers (FAISEM)
- o Monitoring of heat-related signs and symptoms
- o Activation of social networks and support resources
- o Application of protocols and recommendations in case of problems heat-related health

Support material distribution

In order to ensure care for people who live in a FAISEM residential resource, the protocols and recommendations to these through the person responsible for the residential program the Regional Directorate of FAISEM.

Likewise, the nurse has at his disposal teaching material on the Care Plan. Extreme Temperatures to give workshops to family caregivers and (FAISEM) if it deems it appropriate.

Telephone Monitoring of High Temperatures

Target population

Inclusion criteria:

1. Have a **serious mental disorder and be included in the PAI TMG**, and
2. Have at least one of the following care needs, according to NANDA:

- o **00005 Risk of body temperature imbalance r/c**
exposure to heat without proper precautions; clothes
unsuitable for ambient temperature; sedation
- o **00028 Risk of extreme r/c fluid volume deficit**
weights; medicines; knowledge deficit regarding
liquid volume

Telephone monitoring has the same characteristics as the protocolized ones

For the plan already in operation, it consists of making calls

telephone calls under a protocol to the target population, according to the alert level of the province identified by the Institute of Meteorology. The calls are made

Salud Responde teleoperators, with the possibility of referring to health professionals if necessary.

From Salud Responde, a protocolized telephone interview is carried out, which allows the activation of 4 algorithms:

1. Erythema or sunburn
2. Cramps
3. Heat exhaustion
4. Sunstroke/Heat Stroke

Access to the Extreme Temperatures Plan

- 1. Identification of the Risk Population.** During the month of May and first fortnight of June will be carried out by the Nursing team of the USMC carries out the recruitment and assessment of people with SMI in risk situation due to extreme temperatures for the subsequent follow-up and for inclusion in the telephone follow-up plan by the Salud Responde information and services center. being able to follow recruiting patients likely to be included during the months July, August and September.

This recruitment of people at risk is due to the proposed criteria.

The USMC nurse informs the patient of the possibility of including him in this Plan and requests your explicit consent.

In Annex 1 the interventions are summarized according to the alert levels identified by the Institute of Meteorology; green, yellow, orange and red.

2. Register with Salud Responde

All USMC nurses will have a password to access the application of the Responde Salud Extreme Temperatures Plan.

The patient's personal and clinical data are entered in the application.

Subsequently, the follow-up campaign interview is activated telephone high temperatures, which will be carried out by a teleoperator

ANNEX 1 INTERVENTIONS BY THE USMC NURSES

Population TMG	Alert level	Alert level		
	GREEN	YELLOW ORANGE	ORANGE	RED
Level of Risk 2	<p>The USMC nurse must:</p> <ul style="list-style-type: none"> Identify and capture the target population during the census TMG Give advice to avoid and control heat* <ul style="list-style-type: none"> In the case of housing inadequate, identify and implement, together with the social worker, measures that alleviate the environment If you live alone, identify social networks of support <p>*The nurse has teaching material from the Extreme Temperature Plan at her disposal to give workshops to family and formal caregivers (FAISEM) if she deems it appropriate.</p>	<p>The USMC nurse will be required to make home visits and telephone consultations to:</p> <ul style="list-style-type: none"> Give advice to avoid and control heat Monitor related signs and symptoms with the heat Activate social networks and support resources In case of health problems related to heat, application of protocols and recommendations. Inform the patient about the possibility of being included in the Extreme Temperature Plan and ask for their explicit consent to be included. Inclusion in the Extreme Temperature Plan for telephone monitoring. 		