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REDESIGNING EMERGENCY ROOM WAITING EXPERIENCE

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"Se un problema non si può risolvere non è un problema,
se un problema si può risolvere non è un problema"
- Bruno Munari

Abstract

The project that is developed in this thesis is based on the analysis of the patient's path within the emergency room. It is noted that the waiting phase is the most stressful on an emotional level. Opportunities and problems will be analyzed, and the best way to use them in order to change the esperience itself. The experience in the emergency room must have as its only problem the reason that pushed the patient to go there. IT's necessary to relieve the user of other annoyances, and consequently help the medical staff to work serenely.

Index

1. Introduction

Emergency Room is a place everyone needs to visit, soon or later. And most of the time it's a stressful experience. The user himself has to have an health problem to use the service. These characteristics make ER a different kind of service.
The starting point is analyzing the Emercency Room state of art as it is nowadays.

1.1 State of Art

"Emercency hospital room is a clinic organization that ensures the emercency treatment for serious illness, who cannot be solved by the family doctor or emergency medical Service."
This description can be found on the website of Regione Lombardia.
So the user who relates with ER should be in an emercency situation. This statement is necessary to distinguish Emergency room and general practitioner.Doctors involved in this service want to be as efficient as possible, as explained by Sandro Mancarella, primary physician in Ospedale Bassini. As the numer of patients decreases, doctors can be more focused on each of them, passing more time observing and studying the cases.

Family doctors are supposed to take care of all the health problem not related with emercency[1], he is therefore the first figure appointed to take care of the citizen's state of health as well as having the task of assisting him, advising him and guiding him during the therapeutic path within the healthcare facilities.

He is a freelancer who, under an agreement with the SSN[2], is required to ensure free of charge certain services to its clients such as, for example, medical examinations, requests for specialist visits, proposals for hospitalization.

An characteristic that makes the relationship with family doctor more personal, he is chosen by the citizen himself. The patient can change the doctor whenever he feels necessary, because between these two figures has to last as long as possible. And so, ER cannot offer the same experience either.
But, whatever choice the patient makes, it's important to remember that Hospital assistance is guaranteed free of charge for all citizens entitled by the National Health Service: the services provided are in fact included in the LEA and, therefore, no costs are charged to the patient.
This refers to article 32 of the Italian Constitution:
"The Republic protects health as a fundamental right of the individual and an interest of the community, and guarantees free care to the most deprived. No one can be forced to undergo a specific health treatment except by law."
This article defines the "right to health" of all individuals. Health care is guaranteed to all citizens, financed by the State itself through general taxation and direct revenues, received by local health companies through health tickets when necessary.
Thanks to similar principles, it was possible

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1   "La sanità in Italia: i servizi al cittadino e al paziente", pensionielavoro.it

2   Servizio Sanitario Nazionale, or NHS

to establish the National Health Service, the central body that controls and monitors health throughout Italy.

the NHS is substantially made up of various regional health services, national bodies and institutions and the state, aimed at guaranteeing health care for citizens. This is a fundamental right of the individual and an interest of the community, respecting the dignity and freedom of the human person.

1.1.1 A Bit Of History

And to offer health protection to their individuals, first aid was created. As for the historical birth of the first aid department, as distinct from the hospital, these are decrees established around the end of the 1960s.

Before the 1960s, hospitals did not have an emergency room to and from their own, separate from the rest of the hospital, but it was one. The general practitioner would revive patients or go to their home in situations that could be managed in that way. Only patients in need of immediate care were transported to hospital, often as a result of an accident.

Only in 1968 did it begin to refer to an emergency department with the name of first aid.

Law of 12 February 1968 n. 132

"Hospital bodies, [...] Have the obligation to recover without particular convention or request for any documentation, italian and foreign citizens who need urgent hospital care".

Always within the same law it says:

"Title III requirements and classification of hospitals

Art. 19. Hospital requirements:

h) first aid service with appropriate means of transport; "

With the decree of the President of the Republic 27 March 1969, n. 128 it is established that each hospital must be equipped with a first aid service. In fact, the ER is considered among the "compulsory services provided for all hospitals, such as the reception, first aid, radiology, analysis, transfusion, anesthesia and resuscitation and polyclinic services"

In 1992 the FIMUPS (Italian Federation of Doctors of Urgency and First Aid) publishes a first version of the Standards of the structures and staff of the First Aid and emergency medicine.

In 1991 a Technical Commission (State-Regions) was established at the Presidency of the Council of Ministers, with the Ministries of Healthcare and Transport, which prepares a "Program of a National System, Territory-Hospital, for the health emergencies ". A detailed project is included in it for the activation of the Rescue Operations Centers and the single call number 118 (SIP).

The Decree of the President of the Republic del 27/3/1992 Article 3 -The health alarm system

1.The health alarm system is ensured by the operations center, to which the single national telephone number "118" refers. All requests for intervention flow to the operations center for health emergency. [...]

Article 6 - The acceptance and health emergency system

1. the emergency health system ensures:

a) the first aid service;

b) the emergency department.

Article 7 - First aid functions

1. The hospital in the emergency room must ensure, in addition to the emergency diagnostic-therapeutic interventions compatible with the specialties with which it is equipped, at least the first diagnostic assessment, clinical, instrumental and laboratory and the interventions necessary for the stabilization of the patient, as well as guaranteeing the protected transport.

Thanks to these decrees, clear guidelines were established and that all hospitals could follow, so as to avoid misunderstandings or failings in the organization.

1.1.2 How it works

The order of visit of the emergency room is determined by the seriousness of the patient, not by order of arriving. Therefore, arriving by ambulance to the emergency room does not always involve being visited more quickly.

The nurse asks few question to the patient, before visiting him.

Necessary things in at this point are fiew, documents relating to surgical operations performed; details on physical problems or existing diseases; list of drugs usually used to treat common or specific diseases; information on allergies or intolerances, especially when they concern drugs or active ingredients.

If the patient has one or more allergies, triagist gives him a colorful bracelet, instead the white one, to make all the medical staff aware of it. The allergy itself is written in the patient card, but this procedure put attention on it. So, before giving the patient any drugs, doctors and nurses will check the kind of allergy he has.

As explained in the law of the health professions[3], the triage process can be divided, from a medical point of view, into five phases: five phases of the triage process:

What is called "on the door" assessment, relating to the general aspect, freedom of the airways, breathing, circulation and state of consciousness;

The subjective evaluation, aimed at identifying the main symptom and associated symptoms.

The objective evaluation, resulting from the integration of the observed data,

vital parameters and data obtained on targeted physical examination.

The triage decision, consisting in the assignment - in relation to the patient's condition and the availability of resources - of the severity code.

The re-evaluation process, in relation to the improvement or deterioration of the patient's condition. In fact, during the entire waiting period of the meal, the triage nurse has the duty to monitor the patients in the waiting room, so as to notice changes in the state of health. For this reason, the triage path is called dynamic and non-static.

The patient visiting Emergency room are divided by a nurse in four different codes, corresponting to four different conditions[4]:

Red, It is notoriously the most serious case

3   Norelli GA, Magliona B. Riv Diritto Professioni Sanitarie, 1999; 2(4): 291-298
4   "Linee di indirzzo nazionali sul triage intraospedaliero", Ministero della Salute

and with absolute priority over the others, in which the patient is in danger of life immediately needs emergency care, before being hospitalized and therefore sent to the appropriate ward.

Yellow, urgency, the patient risks the compromision of
vital functions. Conditions can become serious, and develop in a red code, for this reason the access is within 15 minutes.

Green, the urgency is minor, conditions are stable and there is no risk it evolves in serious illness. Usually it requires a simple diagnostic performance, so the problem could be solved by family doctor instead of going to ER, the access is supposed to be in 120 minutes.

White, non - urgent, the problem has the minimum clinical relevance, the patient is not supposed to be there, he will be visited around 240 minutes.
If the patient moves from the waiting room, and consequently cannot answer when called, he consequently loses the acquired priority.

For this last case, the white ticket, is up to the nurse or the triagist to make the patient pay what is called "ticket"[5]. Ticket is a certain amount of money, between 25 and 50 euros, that the patient needs to pay when he goes to ER in a not necessary situation.
Lorenzo Fenech and Alessandro Panfili describe the ticket as a necessary spending, it works because in this way the public healthcare has money entrance, and it's

5   "L'evoluzione del ticket in Italia, gli effetti delle politiche sulla spesa sanitaria delle famiglie e prospettive future", by Lorenzo Fenech, Alessandro Panfili, Salute e territorio, Anno XXXIV – Luglio-Settembre 2013

useful also to let the patient know he could solve his problem with the family doctor. In fact, this sort of ambulatorial visits are free.

However some categories are exempted from paying the ticket as they are weaker and more protected. This category includes children up to 14 years of age, the elderly over 65 and people with disabilities, people with with recognized chronic diseases and rare diseases recognized according to the new LEA,
patients who came to the emergency room following an accident at work; who suffers from a specific pathology, if the entrance to the emergency room is determined by problems related to the pathology itself; pregnant women;
blind or deaf-mute individuals; victims of terrorism or organized crime; exempt for income (categories E01, E02, E03, E04)

After waiting in the waiting room, the patient is visited by the specialist doctor who was entrusted to him by the visiting triagist. The specialist is assigned according to the type of problem encountered by the nurse. Priority is given in order of severity. within the green codes, however, a further priority is given to the protected categories already mentioned. In particular, the elderly and the disabled, given that children have a pediatric emergency room to access.

Who accompanies the patient in the emergency room is not authorized to follow him to the examination room, a rule that respects the exceptions already mentioned. The companion must stay in the waiting room until the patient leaves, or decide to leave the

hospital. Information on the patient's health cannot be shared by doctors or nurses.

Once the patient is visited by the specialist doctor, there are few options he has:

Discharge at home: after the checks and the delivery of the First Aid Report and the reports of the tests performed, the patient is advised to continue the treatment at home by contacting the family doctor as soon as possible;

Hospitalization: the doctor proposes hospitalization in an appropriate department for diagnosis, following the emergency room intervention.

Transfer to another hospital: if the problem requires specialist assessments and treatments not available in the facility where you went, you may be offered hospitalization at another facility and the consequent transfer with the most appropriate means to the case (your own, ambulance, helicopter rescue, etc)

Voluntary discharge: after receiving all the information about your state of health, the doctor proposes hospitalization. In this case you can decide to be discharged by your will contrary to the medical opinion. Obviously this possibility is not recommended, unless you know you have a valid therapeutic alternative.

It is important to remember that first aid is an emergency entrance for the hospital. the doctors and the structures to which it is connected are those of the hospital, what changes is the whole path of the patient before the visit.

1.1.3 What if something goes wrong

In Italy the problem of error in medicine begins to be investigated by 2001, although systematic and precise analyzes are still absent (Catino 2006)[6]. About 4% of the 8 million people hospitalized each year in Italian hospitals (320,000) would suffer damage resulting from an error attributable to healthcare facilities or health workers. Once it has been established that the problem has been identified, we proceed in two ways to trace the problem mainly to a human error or to a violation or to try to identify the organizational failures that caused the problem, so that once removed, it will not come back. In the first case, a culprit will be identified, in the second a deficiency to be overcome.

The approach to the person focuses on the errors and shortcomings of the medical staff do not pay sufficient attention to the task.

In this way, a system is formed in which one tries to blame someone, consequently reporting errors is difficult and therefore the start of real organizational learning processes from errors and changes (Waring, 2004) [7]. The accusatory approach, in fact, based on the search for the culprit, involves concealing the error with consequent organizational inertia.

It is therefore normal that as a direct consequence there is a constant sense of pressure from all the medical staff to avoid not making a mistake and being called to respond. A similar mechanism, however, will lead to an excessive effort in controlling the patient as much as possible, as explained by Dr. Mancarella. For as long as the patient is in the

6   L'errore in medicina, Maurizio Catino Consumatori, Diritti e Mercato, numero 1/2006 Argomenti
7   2005 May;60(9):1927-35.2004 Nov 18.Beyond blame: cultural barriers to medical incident reporting.Waring JJ.

waiting room, the triage nurse is personally responsible for it. "If a patient goes to the emergency room for a broken wrist and dies of a heart attack in the waiting room, the nurse on duty must respond to this accident." "For this reason, patients at risk who pass from the emergency room are subjected to tests that they do not need at that moment, infinitely lengthening the waiting times of the other patients". It is normal to make a plate to check that there are no tumors on a patient who does not demonstrate any symptoms related to that problem "." If we identify even one in a thousand, it means that we saved ourselves from a complaint that would have accused us to be careless. "

1.2 Future Reforms

On August 1st 2019, important changes were made for ER in Italy[8], the main one were:
there is a need to further differentiate the coding system already in use based on 4 color codes. It is therefore proposed to switch to a system with 5 numerical priority codes in order to focus attention on the clinical conditions, including for the first time also precise timing for taking charge: this goes from code 1 to distinguish the emergency with the need for immediate access, to code 2 for urgency with access within 15 minutes, code 3 for deferred urgency with access within 60 minutes, code 4 for minor urgency with access within 120 minutes, up to to code 5 for non-urgency with access that must take place within a period of 240 minutes.

But, once presented to the medical staff,

the reaction were negative. The overall idea, interviewing both nursery, as Lucilla Casadoro and Musumeci, and doctors, as Sandro Mancarella or Massimo Loche, is that this reform won't bring the change that is promised.

First, the change from colors to numbers. Colors bring an emotion, as NA Nijdam pointed out in his research[9]. Different colors communicate different emotion, Red is seen as emercency, attention, yellow as fear, as it has to be for the ones who receive those codes. Green and White, on the other side, are seen as "calm, paceful". Changing this chromatic order to a numeric one, brings confusion. "If a patient receives code 1", pointet out Casadoro, "he won't know if he is in life danger or not".

The timing part seems to be fair enough to calm down the users about the long waiting time they can face, but from the hospital point of view, it brings just more pressure to the staff.
Also, if the waiting time exceeds the expected time, neither the patient or the doctors can do anything.

It is further explained that it will also be possible to provide for the presence of voluntary lay staff in the waiting room, specifically trained and authorized, through specific projects. This function can be performed, for example, by staff belonging to accredited voluntary associations or by students coming from degree courses in humanities and health. These figures should

8   Article 4, legislative decree 28 august 1997, n 281

9   "Mapping emotion to color"
NA Nijdam - Book Mapping emotion to color, 2009

have the task of promptly responding to the information and care needs of the patient and carers, providing indications and collecting reports.

Regarding pediatry, particular attention will be given to the detection and treatment of pediatric pain. For this reason it will be used by triage nurse a validated pediatric pain scales, specific to age groups. It's necessary to give less possible opinability to the diagnosys. The more symptoms and pain can be classified on a objective scale, better it is both for the patient and the hospital staff.

One more point made about the medical staff, is related to the number of nurses. The number has to be compatible with the number of accesses to the facility, with the complexity of the diseases to be treated, also taking into account the variability of daily and seasonal flows. In emergency rooms with more than 25,000 visits per year, the triage needs to be run by nurses dedicated to that job only. the last point of this change is about the security of visitors and employee inside ER, recommending the presence of a person like security guard, armed or not.

"This is a good point" commented Casadoro, "the problem here is the money. Unless the state won't destinate more funds to public healthcare, i cannot hide anyone new.

We have an armed guard every saturday night, because it's the most risky day, people coming here are often drunk, as soon as the see someone dressed like a guard they calm down".

But the guard shoul enterveene just in the ER room. If there are some problem in different parts of the hospital, he cannot legally do anything aside calling police.

Some attention is pointed to humanization in taking care of patients within the emergency room. The waiting time can be used to transmit useful information to the patient, both as a patient and as a companion, using brochures, TVs, projectors, music speakers, food and drink dispensers. Also recalled the presence of displays that allow to know in real time the number of workstations engaged, the number of patients in the visiting rooms or waiting for hospitalization, in order to keep patients updated not only on their procedure, but also on the overall load of first aid.

It's also suggested the presence of a contact person, if possible also a psychologist may be present in the emergency room.

"Humanization is necessary to work in public healthcare" is the opinion of Casadoro, "paople who are coming here are afraid, in pain, a wrong word is enough to unleash the worst part of people". But again, the real problem seems to be public funds. "nurses here gain around one thousand euros per month, the are that passionate. And also, there is a law that denies them to have a second job".

2 Research

2.1 Field research

Field research was carried out at the Bassini hospital in Cinisello Balsamo. In particular in the Emergency Department, with particular attention to the diversity of inflow and type of

patients throughout the hours on different days of the week, so as to observe both the point of view of patients and medical personnel. The research was carried out in the waiting room, placing himself in the place of a user, and in triage and visiting room, putting himself in the shoes of a nurse.

2.1.1 Observation of Emergency Room

At the entrance of the hospital, the doctor Sandro Mancarella, primary to the emergency room, is introduced. He will follow the research giving useful information to understand the first aid system, with strengths and weaknesses. First aid can be reached through two distinct ways.

If you arrive on foot, you go through the main entrance of the hospital and follow the
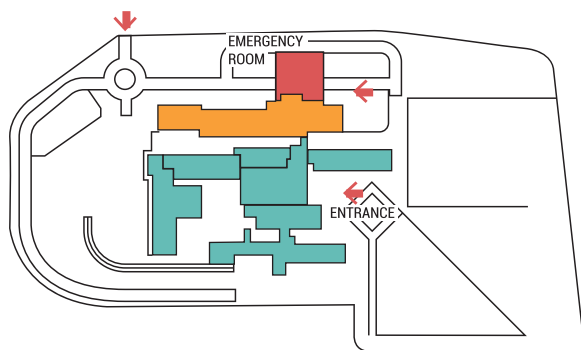
graphic indications. If instead you reach the place by car, there is a special parking dedicated to patients. In this case, a coupon given by the medical staff must be shown on the dashboard once the PS has been accepted. Then there is another entrance, intended for emergency vehicles such as ambulances, which gives direct access to the waiting room of the ward.

It was not possible to take photos inside the environment to protect the privacy of the people in the structure.

The emergency room waiting room has four rows of chairs, separated by the supporting columns of the structure, for a total of forty seats.

The chairs are fixed, cannot be moved, do not present any type of stuffing and have a black

lacquered light metal structure.

In the waiting room environment the furniture is reduced to a minimum. There are two vending machines, one dedicated to coffee and the other for drinks and snacks to be consumed quickly. the bathroom is minimal, the same for men and women, but very clean.

Acceptance to triage occurs through a counter, the patient interacts with the nurse by speaking into a microphone. The separation glass has a small slot through which the patient can receive and give only what is necessary on a first visit. next to the triage door there is a door that can only be opened by the medical staff. It is the door that leads to the examination room, it is opened by the nurses when they call the following patient to visit him.

There is a sign in front of the triage desk that reminds you to wait your turn beyond the red line. at the same height, on the floor, there is a strip of red tape almost completely worn. Because of these conditions, or simply because of the agitation situation, many patients do not notice the presence of the signal, and go beyond it. This involves wasting time asking the nurse to return to his

place.

Remaining in the waiting room, we see another widow, with curtains lowered. they cover the room where the police personnel reside. it is not always present, the policemen are called only if an emergency is foreseen, otherwise during the day there are two hours to keep the situation under control.

While in the waiting room, patients transported by ambulance can be observed. The volunteers of the red cross bring the stretchers to the emergency room, waiting for the examination room to become free. The entrance for these patients coincides in the final stretch, which leads onto the waiting room, with that of the patients who drive to the car.

The peak period is Monday morning, around noon. This is because patients may not be at home on the weekend, and are waiting to return to undergo a visit. Another reason for this is that, on holidays, you wait more time to take action on an altered health condition. However, even in the moment of maximum turnout, the waiting room is not completely full. Bassini hospital has a target of patients of advanced age, and ambulances try not to bring you red codes. During the nights patients rarely happen, both during the week and during the weekend. Most of the codes observed in the field are white and green codes, with very long waits but without situations of serious danger.

Once the environment was observed from the perspective of a potential patient, the waiting room was studied from the point of view of the medical staff.

By placing the nurse on duty alongside the triage, it was possible to better observe how the acceptance procedure takes place from the point of view of the medical staff.

Although the color codes are only four, the nurse can decide to add a letter next to the color, to warn the doctor that he will have to visit him for specific situations. In fact, the nurse is not always given the opportunity to communicate directly with the specialist doctor, who must be based on the patient card presented in the system.

In particular, four letters are used that follow the color code to indicate specific cases:

A (anziano) to distinguish non self-sufficient elderly, fragile people who need to be visited more quickly. As much as a green code can follow, a patient with the initials "A" will be followed in less time than another patient who arrived earlier with the same code.

D (disabile) people with disabilities follow shorter waiting times. The priority set is the same as for patients with the initials "A".

P (percosse) a patient who has suffered violence is treated as a yellow code, to visit him as soon as possible and be able to understand the dynamics of the facts. The severity of the wound would be from a green code, because it does not involve a possible life threatening, but psychologically the patient "P" has suffered a trauma.

S (sepsi) the patient with sepsis often goes to the emergency room without knowing the cause of his health. This is because sepsis can be caused by a small infection considered at first sight harmless, but it can lead to death if not treated promptly. The triagista must be able to catch a patient suffering from sepsis from a few signs that can be identified at

first sight. For example, symptoms such as general malaise, mood swings, fever, or situations such as a drug addict patient, with poor hygiene, or with very damaged skin, must cause suspicion. Much is left to the nurse's intuition.

There is also another principle that the patient, even without an emergency situation, can have shorter times. the pain index. In the patient form that the nurse completes at the first meeting with the patient, if in a state of intense pain he is asked to indicate how much pain he is feeling on a scale from 1 to 10. In the event that the perceived pain is equal to or greater than 8, the patient automatically switches to yellow code. this system was designed to avoid the loss of a patient who does not present evident symptoms but has severe pain. This is the case of some internal bleeding, situations of extreme seriousness which at first sight show only extreme pain in the subject.

Another type of patient that must be made recognizable immediately is the patient with allergies. Upon acceptance at the triage, he receives a bright colored bracelet, in the case of the bassini viola hospital, which signals the allergy of the subject.
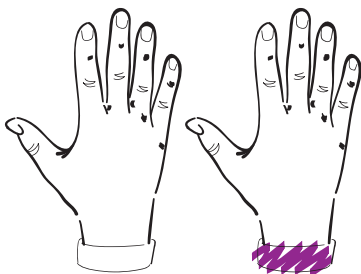
2.1.2 Medical staff interviews

Several employees of the medical staff, with different duties, were interviewed to deepen the relationship with patients and users of the emergency room. In some cases, the respondents preferred not to declare their name, which will be abbreviated using the initials.
Dr. Sandro Mancarella, head of internal medicine
Doctor Giancarlo Loche, director of the emergency room.
Nicola Ippolito, Chiara Galli, Franco Piscitello, doctors.
Nurse Lucilla Casadoro, nursing manager.
Giuseppe Musumici, S.S, nurses.
Giuseppe Borgosano, J.P, OSS.
M.M security Guard (non armed).

From the interviews it was possible to understand more deeply the behavior of patients and medical staff. It is clear from the first meeting that passion is what spurs each of the interviewees to work.
One of the most common problems in their work is being able to control patients and carers in conditions of high stress. The user's mood is therefore altered. Often this leads to disagreements, even physical, between staff and patients in the waiting room. The moment of maximum stress is represented by the stay in the waiting room. While patients are in the waiting room, in fact, they do not receive any information from doctors or nurses, and this leads them to request it. in this way the user does not limit interactions with the medical staff at the time of acceptance and at the time of the visit, but continuing to go to the counter disturbs the work of the nurse who carries out the triage at that time. From the interviews it

is clear that such behavior is tolerated, as the situation is considered to be of high stress, but not willingly accepted. The main ailment is given by the patient's carers. Except for protected categories, in fact, patients cannot be accompanied during medical visits. While waiting for the patient to return, information cannot be received. Some hospitals have equipped a screen to show the path taken by the patient while the companion remains in the waiting room, so as to leave a contact. At Bassini hospital, however, this screen is not present, and the nursing staff is not aware of the patient's condition once he passes to the specialist doctor. The absence of information therefore leads carers to suffer severe stress, for a prolonged period, and in some cases to vent anger with medical staff. In severe cases this leads to physical violence.

So there is a lot of stress on both sides. The patients feel abandoned during the waiting period, the medical staff, in particular the nurses, do not feel respected, coming in some cases to fear for their own health.

There are also some particular patients to whom the nurse must pay particular attention. As explained in the previous chapter, there are abbreviations to indicate patients with special needs.

One of these cases is a victim of violence, in most cases a woman. Doctors explain how the intervention on a woman victim of violence must be timely, because often it is driven by the desire to report, rather than to receive treatment. "They don't come here for a black eye, they come here to find refuge". Consequently, it is essential for the hospital to collaborate with associations that

protect these women and that they can take charge of such a patient. In the case of the bassini hospital, the project that supports it is VENUS (VErso un NUova Strada).

The Venus project offers reception, psychological support, reception of minors. While I carry out the interviews, a woman victim of violence is taken charge. The medical staff immediately identifies the problem and puts it in contact with a voluntary operator. The system is very fast, in thirty minutes the woman is already talking to the volunteer about how the accident happened.

Another problematic kind of users who go to the emergency room are homeless people. They are homeless people, who often, mainly during the winter, go to the emergency room without particular physical problems, but only to receive welcome. The hospital offers them shelter and a warm place to stay, and they often spend the night in the waiting room. "I understand perfectly the situation they are in," explains Mancarella "according to the law we should call the police to have them removed. in that case they are taken out of the hospital, and left on the street. But we don't want them to undergo such treatment". This is because these people, left in the winter cold, could die. So medical personnel have to look for a solution. on the one hand, they cannot accommodate all those who present themselves at their doors, because otherwise, as has already happened, the number increases. homeless people represent a category that is not well accepted by the rest of the users. They often have poor personal hygiene, and sharing the waiting room with other patients can annoy them. For the same

reason, every object they come into contact with should then be disinfected. "it is the same treatment for each patient. the bed used by a patient must be cleaned immediately after, before it is used by others. Unfortunately, for fear of being sent away, the clochards hide, if we are not careful we do not even notice who took refuge in a closet to sleep, and we don't know we have to disinfect that environment. "

In addition to the problem of hygiene, there is that of mental instability. Many people who are part of the category are not lucid, whether because of the use of drugs or not. So they may have unjustified and unpredictable raptus of anger. "It is for this reason that we wanted to have an unarmed guard present at times when attention is lower" explains Casadoro "such as nights. It is not prepared for a physical confrontation, but we have seen that the mere presence of a guard makes problematic patients feel more comfortable ".

Drug addicted patients also exist similar to the homeless. Bassini hospital does not often deal with users of that category, but they are prepared to take care of it. "The most medically difficult situations we face with such patients are overdose victims." "There are so many drugs currently on the market that we often can't understand what the patient took before he got here." But apart from red code patients, such as overdose patients, patients who have taken drugs but present themselves for other reasons also represent a problem. "They are agitated, unpredictable, many nurses are afraid to relate because they act strangely and in a short time they can go from a state of calm to one of intense anger,

endangering themselves and other patients inside the room. waiting ".

The waiting time is therefore one of the main problems present in the emergency room. But what does long waiting entail? the respondents clarified the reasons for the problem. Some times are physiological within the hospital. since patients are visited by doctors inside the hospital, they must be visited when the doctor is free from other visits. First aid patients are then placed by the doctor who is dedicated to hospital patients. This leads to an extension of waiting times, not being all doctors dedicated to the emergency room.

Another problem identified by medical staff is the lack of health education. Many patients who go to the emergency room, in particular all the white codes and many of the green codes, could have contacted the general practitioner to solve the problems. But emergency room is perceived as a rapid intervention surgery. On the other hand, explains nurse Casadoro, "general practitioners tend to suggest patients to go to the emergency room even when not necessary". This is because, although the problem is mild, due to the GP's working hours, it is possible that they can visit the patient in a week, while the emergency room, although it offers long waits, will carry out the same work over the of a day.

To prevent this system from being applied too often, however, "every visit to the emergency room is marked, so that it appears how many times the patient of a doctor goes to the emergency room. If the system has a suspicious number of visits from us, the general practitioner is contacted to report the anom-

aly "

From the interviews with the medical staff it is therefore evident that the moment of maximum tension for patients and for themselves is the wait. The time spent in the waiting room is not invested, patients and carers therefore seek a contact to get more information about the time needed to make the visit. By doing so, however, they disturb medical staff intent on working, potentially leading to human errors. If during the time in the waiting room the patient and the companions managed to be distracted and not feel the passage of time, it would bring a marked improvement in the service.

2.1.3 Patients interviews

Patients and carers were interviewed who visited several emergency rooms in the province of Milan. Twenty users between 18 and 85 years of age, men and women, with different working lives were taken into consideration.

The interviews were based on the users' mood during the emergency room waiting period. The emotions experienced before having medical feedback are the focus of the interviews carried out.

In particular, in four phases of the relationship with the emergency room, detection of malaise, acceptance to triage, waiting and visit, the interviewees were asked if they had experienced anxiety. The moment of maximum tension turned out to be that of waiting, with nineteen users out of twenty who remember that moment linked to that emotion.

The other moment of anxiety was the discover of illness, in particular for the once who didn't know the nature of it. In fact, physical damaged caused by accident is more understandable than pain coming from inside the body.

Listed below are the main citations relating to the experience of the interviewed samples, with particular attention to the mood and what it was connected to, if possible to describe it.

The patients specified that there were two moments of maximum tension, the first when they understood they had a problem, the second in the waiting room. However, although both moments are considered intense, they are represented by different emotions. When the patients decided to go to the emergency room they felt fear, on the way to get there.
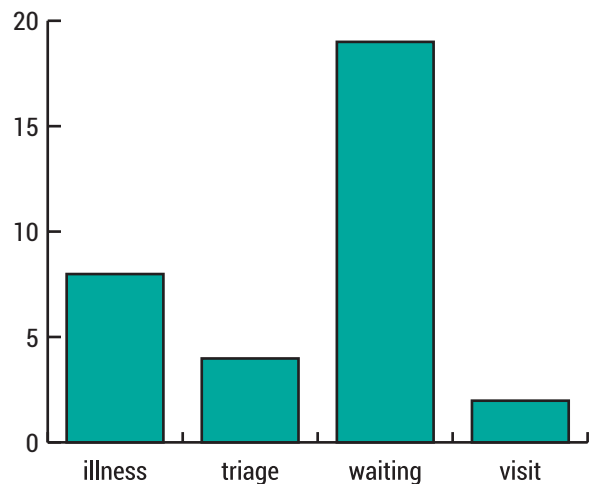
But once the acceptance of the triage had passed, they started to feel unnerved, nervous. The explanation for this behavior is given by the fact that, when they are in the waiting room, the patients are already inside the hospital, and have already performed the triage. For this reason they have a first feedback on the state of health. Seventeen

out of twenty users surveyed received white and green codes. With a similar code, the waiting times were very long, but the health conditions were good, and they did not have serious problems. So, as stated by an interviewee, "I just wanted to go home".
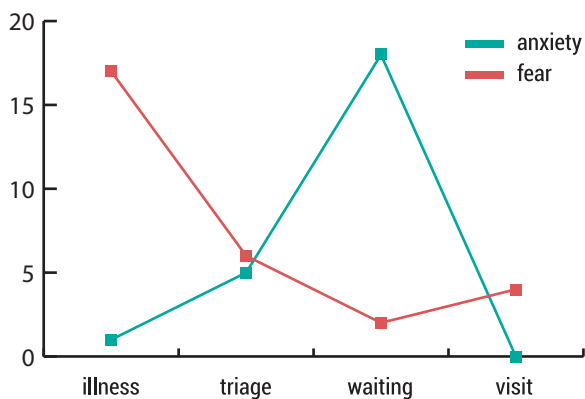
L.F. 63 Years old, companion of 85 years old woman - experience in fatebenefratelli hospital:
"I found it useful that the path the patient is taking inside the P.S. was present on the screens, it helps to distract you and keeps you in contact with the person you accompanied"

M.S. 24 Years old- experience in S.Paolo hospital:
"the experience in PS was long and stressful, I did not receive information, how much reproaches for not having turned to my general practitioner. being a light case, I had the white code, and consequently the ticket to pay. The doctors and nurses who followed me afterwards, on the other hand, were very attentive and loving. "
"When I was an escort I spent all the time texting friends on the phone, until I saw that the battery was running low and I had no charger behind. luckily the triage nurse was

kind enough to lend it to me.

F. F. 21 Years old "I often attended the P.S. of the Sacco hospital, because I trained in that area of basketball and kickboxing, and it often happened that I hurt myself. Waiting has always been long, but I had training companions to keep me company, and when they got hurt they accompanied them"

A.G.34 Years Old, companion of her 36 years old boyfriend, Policlinico of Milan:
"I accompanied my boyfriend in P.S. for severe abdominal pain. At first glance, the nurses seemed a little skeptical about the seriousness of the situation, but as soon as they realized that he was suffering, they did not hesitate to provide a stretcher and continuous assistance, waiting for the specialist to be freed ".

L. M 18 Years old
"I went to P.S. after a fall from a horse, I had nothing serious, I had to wait 5 hours before hearing it. The wait was exhausting, I had nothing to do and I could not leave the waiting room otherwise I would have lost my place in the queue "

Although very different from each other, the relationship with the emergency room was commonly difficult.
What most stressed the patients interviewed was the lack of information received, and the lack of specific culture to understand the problem they had to face. Not knowing how long to wait, what you have or in what condition the person you have accompanied is in a situation has caused a lot of stress to the

users taken into consideration. Another serious problem encountered for the emergency rooms in which the patients were, all public, are the waiting times. The time spent waiting is considered too long and not justified, it was not perceived as used.

The cases in which the memory is not linked to a situation of difficulty or anxiety are those such as F.F. being a sportsman. is used to accompanying or being accompanied often to the emergency room. a slight bruise often occurs on the basketball court, but it is still customary to go to the emergency room to show the trauma to more expert eyes. This patient is different from the other respondents. The patient's experience itself is experienced with different sensations than that of the other patients. To understand how it can be possible to exchange the positive experience, like that of the patient F. F. It is necessary to understand what makes it different from the others.

First, the type of health problem. F. is used to getting hurt on the playing field, he knows how to recognize a retort or dislocation when he tries it, and however intense the pain may be, he already knows what awaits him. So he has no doubts to solve, he already knows what treatment he will have to undergo. The wait is shared with other people, his friends, who manage to make familiar an aseptic and tense environment like that of the waiting room of an emergency room. As long as waiting times are long, F. already knows how long to wait, and takes note of it. He has no precise information, but being a young boy with a problem that cannot degenerate into something more serious, he is likely to wait

at least two hours. So what has eased the tension can be summed up in the knowledge of the situation, and in distraction from the problem.

2.2 Desk research

2.2.1 Why waiting

To better understand how it is possible to intervene within the waiting room in the emergency room, it is right to analyze the causes of the existence of waiting. And the duration of it. Rastelli[10] has dealt with this topic, which as the first cause analyzes the decrease in health facilities within the Italian territory. In particular, there has been a drastic decrease in that type of structure, while in Italy the population over 65 is increasing, as life expectancy has increased. Speaking of numbers, this part of the population in the 1950s was made up of about four million individuals, while in 2004 it included about 10 million.

In addition to these numerical data, questions have also been raised as to why emergency services attract many patients who do not have a real medical emergency.

Fragile elderly patients, although they do not have a real urgency, still need to be checked quickly, and the emergency room takes care of them.

There is a desire of the population to have short response times to problems that are perceived as urgent, but which in reality, seen from a medical point of view, are not.

It is known that being the emergency room

10   Sovraffollamento in pronto soccorso
G Rastelli, M Cavazza, G Cervellin - Emergency care journal, 2010

within a hospital, you will have access to all the technologies it can offer, and thus have a more precise comparison than going to the general practitioner, who unlike the emergency room must entrust the patient at outpatient visits to another location.

In 2003 Asplin et al.[11] realized that overcrowding in the emergency room, the situation therefore leading to long waiting times, is identified by three main factors:
input: quality and number of services sought
Throughput: care processes within the ER
Output: patient movements after intercourse with the emergency room.
These three factors can have their own problems that affect the other two, for example a classic input problem are patients who go to the emergency room without needing it, for an overestimation of the problem or because they are used to doing it. The throughput can be problematic if the staff number of the medical staff is less than adequate. Finally, the output brings difficulties if the periods necessary for resignation are prolonged, or if the number of beds is not adequate for the needs. However, what results from the research carried out is that as much as users can be pushed not to often use the emergency room instead of an outpatient clinic, the problem of overcrowding will not be resolved definitively. This happens because the timing of the emergency room is strictly connected to the availability of the hospital to which it is connected. As much as in fact we intervene in the emergency room, the problems we find are the consequence of other problems that

happen at the hospital level.

2.2.1 Waiting time

To better analyze the mechanisms involved in the emergency room waiting room, it is good to understand how a user relates to the waiting time preceding the use of a service. David H. Maister analyzed the mechanisms involved in the perception of the quality of a service offered after a long time.
First of all, it must be understood from what the satisfaction of a user is given. Maister defines satisfaction as the result of a formula: satisfaction = perception - expectations. This means that the difference between what the user expects and what he encounters establishes the satisfaction he feels.
Once established what Maister defines as the "first rule of service", we can move on to analyze the different psychological aspects that come into play when it comes to dealing with a wait.

"Occupied time feels shorter than unoccupied time."
In particular, the more the user is attentive to the passing time, the more bored he is. It is therefore better, in the event that waiting is inevitable to provide the service, to ensure that the patient is distracted by something else. Within the description of this point it is specified that most of the services decide to distract their customers with topics related to the service itself. However, in the case of specific services that have to do with moments

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11   A conceptual model of emergency department crowding. Asplin BR1, Magid DJ, Rhodes KV, Solberg LI, Lurie N, Camargo CA Jr.Ann Emerg Med. 2003 Aug;42(2):173-80.

of tension, we tend to choose distractions that have nothing to do with the service.

"People want to get started."

The user needs to know that the relationship with the service has started, even if the service has not started. In the case of first aid, it is important that the first contact, that of acceptance to triage, takes place in the shortest possible time. In this way, the patient will know that his case is being analyzed, and that whoever provides the service knows about his existence. Otherwise, Maister points out, there is a risk of raising anxiety levels.

"Anxiety makes waits seem longer"

The state of nasia can be caused not only by the lack of interaction before the start of using the service, but by many factors. In the case of first aid, it can be intrinsic to the situation, which brings tension by simply being in that place. It is therefore appropriate to avoid the occurrence of a similar psychological state in the patient as much as possible.

"Uncertain waits are longer than known, finite waits"

Once the patient knows how long to wait with certainty, the state of anxiety decreases, because he receives certainty. Not knowing how long it will have to wait causes a continuous state of tension in the user, because it could be visited after ten minutes as after three hours. However, the communication of a waiting time must be done carefully. Although in fact the state of anxiety decreases once the remaining wait time is known, it peaks after the waiting

time has elapsed because, as already said, the patient finds himself not knowing why this is happening.

"Unexplained waits are longer than explained waits"

Explaining the reason for the waiting time to the patient will help him understand the situation he is in. On the contrary, if he is not provided with any type of information, the state of misunderstanding in which he finds himself leads him to feel at fault, and in some cases to become aggressive.

"Unfair waits are longer than equitable waits"

Although the patient is not physically in line, he observes who arrives after him. He will therefore expect to be visited after who was present before, but before all those who arrived later. However, in the first aid system the order of arrival of patients is not decisive on the order of visits. If the patient waiting on is not aware of this, he perceives his treatment as incorrect, and risks experiencing dissatisfaction with the service.

"The more valuable the service, the longer the customer will wait"

The perception of the service is crucial in the relationship that the patient will have with it. For this reason, the waiting room environment, in which the patient will spend most of the time, is essential. By properly managing the user experience in that place, you will have more control over your mood while you wait.

"Solo waits feel longer than group waits"

It is natural to seek sharing and human

contact, especially in moments when the patient experiences anxiety and fear, he wants someone to talk to about it. Also for this reason, among the patients analyzed, those who were accompanied suffered the least from waiting.

As also confirmed by Brown, the perception of time changes according to the level of attention that is devoted to it. The more the patient is focused on the passage of time, the more the wait will suffer. If the user is instead distracted, so as not to think about it, it will seem to him that time passes faster. The patient's attention should therefore be drawn to other sources as much as possible.[12]

Someone could think about time as a part of the service, but not as basic as the use of the service itself. In the case of Emergency Room, this way of thinking can lead to the impression that the quality of care is the fundamental part. On the other side, time passed in waiting room can stress the patient as log as he waits, being forgot as soon as he entered to visit room. But the time that the user feels while waiting play a main role in the judgement he will have about the service. Conseguently, it will determine how the patient will behave with medical staff one his waiting time is finished.

Time, together with space, represents the essence of the service itself, and in particular what leads the user to evaluate it. They are two factors that in some cases determine the evaluation of the user rather than the final result of the service itself.[13]

When defining time as one of the two fundamental factors in the judgment of a service, it is not necessarily intended that the length of time spent is decisive for the success of a service. That is, the conclusion that the less you expect for a better service will be the quality of the service, or the perception of the service by users, is wrong. But the quality of the waiting time that determines the user's opinion. Occupying time with information and activities to carry out leads to a final patient satisfaction, as demonstrated by Thompson[14], in the medical field. In fact, in some cases the possibility of occupying time constructively was more appreciated than a reduction in the waiting time itself. Focusing on reducing the waiting time rather than using it would not lead to the expected results. Provided that it is possible to reduce waiting times in the emergency room. Despite many attempts, in fact, it has not been possible to drastically reduce the time, but there is the possibility that the expectations are a part of the visit to the emergency room itself.

12   Brown, S.W. Time perception and attention: The effects of prospective versus retrospective paradigms and task demands on perceived duration. Perception & Psychophysics 38, 115–124 (1985).
13   Heinonen, K. (2004), "Reconceptualizing customer perceived value: the value of time and place", Managing Service Quality: An International Journal, Vol. 14 No. 2/3, pp. 205-215.
14   Thompson DA, Yarnold PR, Williams DR, Adams SL: Effects of actual waiting time, perceived waiting time, information delivery, and expressive quality on patient satisfaction in the emergency department. Ann Emerg Med December 1996;28:657-665.

3.1 User journey Map

To better analyze the main points of the interaction between the patient and the emergency room, a user journey map was created. The user's path has been divided into several stages. The first is the manifestation of symptoms that lead the person to choose to go to the emergency room instead of going to the general practitioner. symptoms may have appeared in a short period of time or suddenly, such as in the case of an accident. But the user's desire is to receive answers in a short time. The next stage is that of the path that separates the user from the hospital. Different solutions to movement will be analyzed, whether the patient moves with his own means or otherwise.

Subsequently the phase analyzed is that of arrival, therefore the first contact that the patient has with triage, including acceptance. After carrying out this step, an element that occupies an extended period is that of waiting for the visit. Once the waiting period is over, the next step is the examination of the user by medical personnel inside the hospital. Once the patient has been examined, the relationship with the emergency room has ended, regardless of whether the patient is hospitalized or discharged as soon as the visit is over, from that moment he is taken in charge by the hospital structure outside the emergency room.

In addition to the different phases in which the path taken by the patient can be divided, each of them has been divided into different touchpoints. Touchpoints are the points of interaction between patient and service. Before going to the ER, the patient can inquire on the web to receive information on his health, or use the app made available by the Region, Salutile, which will inform him on the level of crowding of the various emergency services in his immediate vicinity. When the patient moves towards the structure, the interaction moves to the means of transport used and subsequently to the point of arrival, for example the hospital parking. After this phase, the user enters the hospital and reaches the emergency room he has chosen, arriving in the waiting room, immediately before receiving a preliminary visit in triage, where he will be asked to provide the health card before making him sit in the nurse to assign it a color code. After receiving it, the user has a time to spend in the waiting room before receiving the medical tests he needs, the subsequent diagnosis and being able to conclude the relationship with the emergency room.

Another fundamental aspect that has been used to better understand the patient's psychological point of view is the interaction that he or his companion can receive at the different moments analyzed. Likewise the amount of information that the patient receives during the journey.

Finally, as shown by the interviews, the level of stress perceived by the patients during all the different phases, so that the moment in which it is better to intervene to solve the possible problem is made visible.

STAGES

TOUCHPOINTS

INTERACTION/DISTRACTION

patient alone

companion

RECEIVED HEALTH INFORMATIONS

STRESS LEVEL

SYMPTOMS · MOVING · ARRIVING · WAITING · EXAMINATION · DISCHARGE

WEB · APP · TRANSPORT · PARKING · HOSPITAL · P.S. · WAITING ROOM · TRIAGE · SANITARY CARD · INFIRMARY · TICKET · WAITING ROOM · MEDICAL EXAM · DIAGNOSYS · BILL
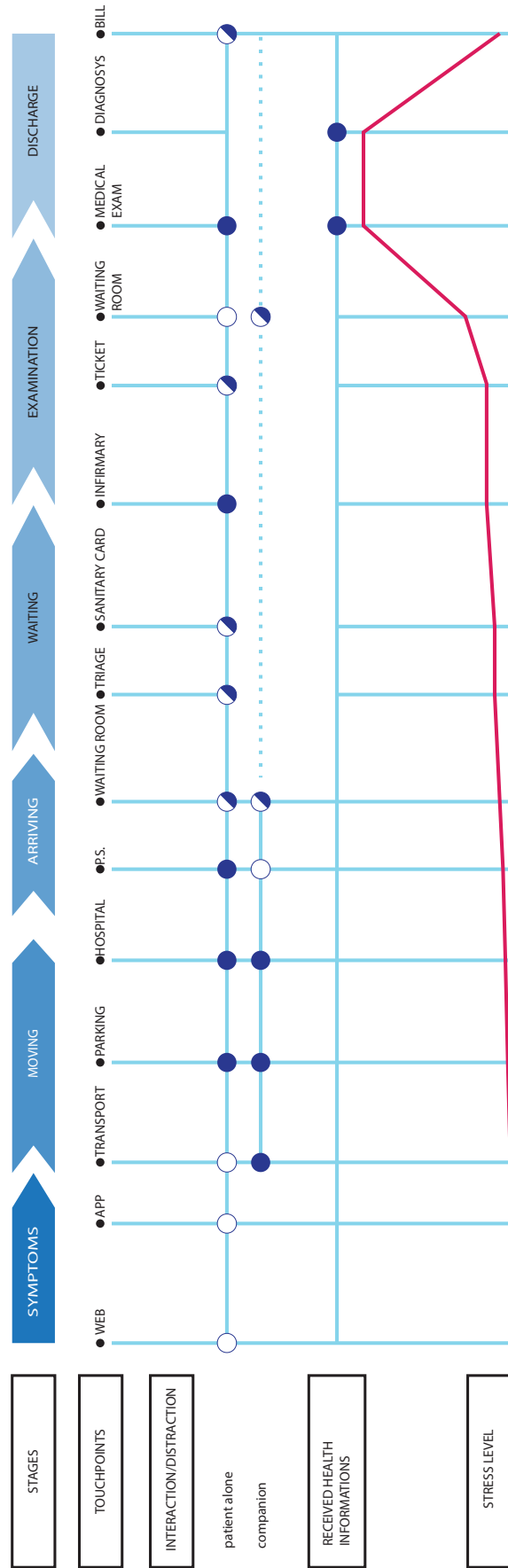
Analysis of interaction point in First Aid:

the first step for the patient is the sensation of illness. as soon as it shows, 60% of the people check symptomps on the web[1] , as they find internet a "a valuable tool for finding health information in order to support their existing health care resources." But people have difficulties to distinguish quality of information, the result is, even before the contact with Emercengy Room, there is confusion.

Here in Italy there is just one app related to Emercengy Room: SALUTILE Pronto Soccorso.

It manages all the P.S. in lombardy, and as it's written in the description:

You can visualize on a map or on a list the nearest P.S. in lombardy

it's shown the overcrowding level: low medium high (index NEDOCS[2]).

Every P.S. shows:

- number of patients, waiting or not

- overcrowding level

- geolocation and navigation

If you are in emergency, call 112.

Google Play™ shows us that the number of donwload is 297[3], that means the app is not known.

And, as explained by Sandro Mancarella, primary physician in Ospedale Bassini, few information on the app are wrong.[4]

1	Evaluating the Process of Online Health Information Searching: A Qualitative Approach to Exploring Consumer Perspectives
Alexander S Fiksdal; Ashok Kumbamu; Ashutosh S Jadhav; Cristian Cocos; Laurie A Nelsen; Jyotishman Pathak; Jennifer B McCormick
2	National Emergency Departement Overcrowding Study, a formula used to extrapolate the level of overcorwding.
3	on February 18th 2020
4	Sovraffollamento in Pronto Soccorso Analisi del fenomeno e proposte di gestione Gianni Rastelli, Mario Cavazza, Gianfranco Cervellin, Emergency care journal - organizzazione, clinica, ricerca • Anno VI numero 2 • Giugno 2010

The NEDOCS parameters and the resulting formulas deriving from them are considered among the most efficient available, as explained by Rastelli et al. The problem does not concern the mathematical formulas on which the system is based, but the origin of the values taken into consideration. In fact, at the origin there are numbers that often do not correspond to the reality of the facts. For example, the number of beds available. There are various dynamics that can lead to occupancy of beds without official communication, as explained by Dr. Mancarella. It is possible that a stretcher serves in another ward, for example, or that a patient does not feel well in the waiting room and needs it to lie down. Similar decisions are made within minutes, and not always communicated to the system. This brings about a phase shift of the NEDOCS calculation. Another factor taken into consideration are the rooms connected to the emergency room. Also in this case, however, for logistical problems, some rooms are used less or used for other uses because they are in uncomfortable positions for transporting the patient. It is the case of two rooms in the Bassini hospital that should serve the emergency room patients, but having been built too far from them they are not used.

During field research, both doctors and nurses suggest an early approach through app, related to direct patients to the right P.S. They explained not all kind of doctors nor specific equipment are always present. That means in specific cases the patient need to be transferred to a different hospital, because in the current one the scecific doctor is not present. In this way precious time is lost.

The situation as it is right now opens a big oppotu0nity of improvement. Overcrowding is an issue. As esplained by G Rastelli, M Cavazza, G Cervellin[5] , the space of P.S. itself is perceived as a safe place where it's possible haveng a response to an issue in a short period of time. Also, patients are older than before, expecially in Italy, where the population si growing slowly but of course it's aging.

All these circumstances bring the patient to PS.

Most of the people i met went by car, all PS are well organized from this point of view, they have a parking lot, if you pass through PS parking is free. I's not working the same for public transporation, ticked isn't paid back.

And, a lot of PS are not easy reachable through public transportation. All of them have dedicated lines, but of course an hosplotal structure needs space, so it's oftner far from city center.

majority of people use navigation app while going to PS,

and this is also a good opportunity of action. They already have online, geolocated cellphone, why not use this, as it already works on Google Maps™ reviews.

Once the patient is arrived to the hospital, he enters in the Emercengy Room section.

There are different entries in every hospital: one for ambulances, it connects directly with Emercengy Room, it's build to request less time than possible, fot the worst cases

one for patients who reach the structure through public trasportation. Often it's the entry shared with the other parts of the hospital. this brings a lot of confusion, expecially the first time.

A third entry is present for people who reach the place with their own car, it's well reported and easy to understand.

In Emercengy Room, the biggest room is waiting room. the patient wait a small amout of time here in this phase, before acceptance. The time passed here is necessary because other patient are occupiyng the triage.

Triage is the acceptance phase. It's essential to understand the condition of the patient, assigning him a code. Here the patient meets for the first time hospital staff. A nurse, through a glass, makes few question (starting from the name, going through symptoms) to better understand the occurring issue.He will ask the patient the sanitary card, to verify all the infos. This is a new opportunity. Sanitary card contains a lot of information related to the patient, but the patient doesn't use it directly. The card communicates in only one directione, from the patient to sanitary service.

There is a format that the nurse need to fill, but a lot is left to the experience of nurse, as explained by Lucilla Casadoro, charge nurse in Ospedale Bassini, Cinisello. "a lot of questions are tricky" she says "it's asked the level of pain, from 1 to 10, but if we ask the patient it will be always higher than the real feel". She is referring to an automating procedure working through that data. In fact, as the level of perceived pain reaches 8, the

5   Sovraffollamento in pronto soccorso -G Rastelli, M Cavazza, G Cervellin - Emergency care journal, 2010

patient needs to be visited as soon as possible.

All the generic datas are collected, now the patiend needs to be quickly visited to estabilish how serious his condition is. So, he's brought to the infirmary, right next to triage, where he received more specific questions, nurses analyze blood pressure, asking for taken medicine, depending on the suspects the have relatet to the occurring issues. As soon as the generic medical examination is finished, user receives a ticket, and need to wait the specific medical examination, requested by nurse to the hospital doctors.

The ticket can be four different colours, responding to four different levels of severity: White, the patient in't in an emergency situation, he could have used public ambulatory, instead of Emercengy Room. This code is similar to the green one, but it's more a warning for the patient himself, to understand that he shouldn't go to Emercengy Room for a similar issue. An example found for this kind of code is Maura S, a 26 Years old university stutent. She had surgery in Catania, Sicily, her home town. Then, she moved to Milan, and needs to keep the medication for few weeks. During this period of medication, she started feeling a iching in the area and went to ER. So, there was no emergency ad all, expect the lack of information she received from her personal doctor. She should contact a doctor in Milan, waiting for appointment and get the information needed. Instead, going to ER bring her to wait five hours before a nurse was free to change her medication and send her home. From then on, she needed to go to

the hospital (Ospedale San Paolo) three times a week waiting for the complete recovery. in this way, hospital staff waste time taking care of a patient without an emercency situation.

Green, he is in a little pain, could have used public ambulatory, there are no shown syntoms of a serious illness. The patient studied for this code is Federico F. a 22 years old basketball player. During a game he dislocated his ankle. When he reaches ER, he is in pain, but doesn't need to be visited quikly. Medical staff of Ospedale Sacco already saw him few times, as a lot of sport players, accidents often happen. He can wait hours and the illness would'n get critical. This patients need ER, but he could also wait few days for an appointment with his personal doctor. Federico waits 3 hours, but thank to the company of his teammates, and knowing the problem, the perceived time is not that long.

Yellow, the patient is in a gret pain, needs to be visited as soon as possible, the law says max 15 min. He's not risking his life, but the situation can get worse. A lot of elderly people go directly to yellow code, to prevent them to wait a lot of time. They are considered, as explained by Massimo Loche, director of Bassini ER, "fragile". So, medical staff takes care of them faster than other patients. The observed case for yellow ticket is Christopher S. 36 years old employee, who presents a strong stomachache. As soon as he arrives to the Fatebenefratelli ER, he receives green code. He is young, he is not presenting any serious symptom, except for the pain. After few minuts in waiting room, the pain

is so high he started having dry heave. This is a sort of alarm for nurses, who understand immediately the illness is something more serious than supposed. In fact, medical staff visited Christopher again and make the Giordan manoevre, a medical procedure specifically made to understand if the patient is suffering of renal colic. He responded positively, the illness is found, and receives immediately the yellow ticket. Nurses gave Christopher an antidoloriphic medicine, made him lay down on a bed, waiting for the specialist to arrive. At the end, the patient waited two hours.

Red, the patient is risking his life. the priority is maximum, and every minute important. This patient is visited before ant other.

Once the user receive the ticket, except for yellow and red code, the waiting time starts.

Waiting rooms in public hospitals are similar to each other. First, the are quite empty, just a few things are essential in that enviroment, such as chairs, vending machines and a toilette. medical personal needs space to pass through during emergencies. The rest is up to the hospital itself. in detail, chairs are the less comfortable than possible, presenting a metal or plastic surface. This is a decisione made on the fact, as Giuseppe Musumici, a nurse, explains, that the fabric need to be cleaned. "looking at a stain you don't know the origin is stressfull and disgusting for the patient". There is the possibility of using this waiting time and waiting room in a productive way. As Allison B. Arneill et al. found out[6], the

physical environment of a physician waiting room related to the perceived quality of care. So, small chenges can affect completely the patients' approach to the idea of hospital itself. It already is a stressful moment, that needs to be lived better than possible.
The potential of change this perception affects the patient behavior, in fact the enviroment also affects the patients' positive impressions of interactions with staff.

It's necessary to undersand the stress felt by the patients.
93% of waiting patients with green code, need to stay up to 12 hours (Agenas) before even know what makes them sick.
This amount of time needs to be used somehow. Joan Suchomel suggests different health related activities[7], that can distract users and be useful at the same time. Patients need to do something useful during their time. For istance, a free blood pressure test station is distracting, and keeps the attention related to health field.
A lending library can help support patient satisfaction and reduce the perceived waiting time.
A simple device such as free wireless internet will assist patients using their smart phones to access health information; supported also by common charges or electrical sockers.

An insight seen from interview with medical staff is related to the culture of the patient. "People need to be educated about public health" says Casadoro, "they need to better understand what our country offer them".

6   Allison B. Arneill and Ann Sloan Devlin of the Connecticut College Department of Psychology published in The

Journal of Environmental Psychology 2002
7   Design Solutions To Improve Waiting In Healthcare by Joan Suchomel | December 6, 2016 on Healthcare Design Magazine

Here she is referring to the fact that Italy offers public free health service. This right bring as consequence that as soon as the patient feels sick, he goes directly to Emergency room. Secondly, general practicer are open to let their patient go to ER.

Last, as a free service, is conseguently perceived as a poor service itself. (...)

As collected in different interviews, the staff is also streesed out during Emercengy Room working hours. "Our work is perceived as an obligation to the patient" explains Lucilla Casadoro, "we need to be fast, kind, and foolproof". Of course, the people health is involved, and no one wants a careless nurse. But the patient needs to be as calm as possible, to better interact with nurses and doctors. "calm" is also the feeling Allison found to be more desired by patients during the waiting time. So, finding out the best way to make it possible can bring positive changes on both sides.

As soon as the witing time is finished, patient is visited by different doctors, depending on the kind of illness he has. Here the journey changes for user companion. Until now patient and companion (if present) were together. Then the familiar or friend is alone, in waiting room. This is also a precious time that needs to be used. medical staff cannot share information about the patient, or simply they don't have any becouse are not talking with the visiting doctor.

Providing information about who is been visited at the moment to the companion can reduce anxiety level As Myriam Roxana et al.[8] found out. They interviewed different companions, waiting for their loved ones. sentences like "i would like to know at least how is he doing..they (medical staff) don't tell me anything, no one can enter. They told me doctor is making an eco, but no one tells us anything".

This kind of feeling has to be erased from ER. It's clear how there is a sort of two different and enemy fronts. Nurses and doctors need and deserve to be recognised as expert in their field. Users need to trust them, otherwise the stress is amplified by the impossibility to help.

After the patient is dismissed, he receives diagnosys and medicines, and he can finally go home.

But there is a last step for the one who received white ticket at triage. White ticket tells the patient that his visit was not necessary, nor an emercency. The risk is to occupy time and space reserved to people in great pain or illness.

following this way, the user needs to pay 25€ (Fondazione IRCCS Policlinico San Matteo). Also, if the patient goes to ER, receives his code and decide to leave, he has to pay the ticket.

Ticket is not paid by all the protected categories, such as patients younger than 14 years old or older than 65.

It's not paid by all the patients who are going to ER for the second time, such for an ambulatory visit.

In some special cases, where the patient

8   L'esperienza dell'attesa in Pronto Soccorso: indagine qualitativa sui familiari dei pazienti Myriam Roxana Pariona Mollares, Tiziana Nannelli

didn't behave correctly, made problems or damaged the hospital structure, the hospital itself can decide to make him pay a fine.

The amount of the fine is decided by medical staff and, if necessary, a lawyer, and it's different from case to case.

STAGES

TOUCHPOINTS

INTERACTION/DISTRACTION

patient alone

companion

RECEIVED HEALTH INFORMATIONS

STRESS LEVEL

SYMPTOMS MOVING ARRIVING WAITING EXAMINATION DISCHARGE

WEB APP TRANSPORT PARKING HOSPITAL P.S. WAITING ROOM TRIAGE SANITARY CARD INFIRMARY TICKET WAITING ROOM MEDICAL EXAM DIAGNOSYS BILL
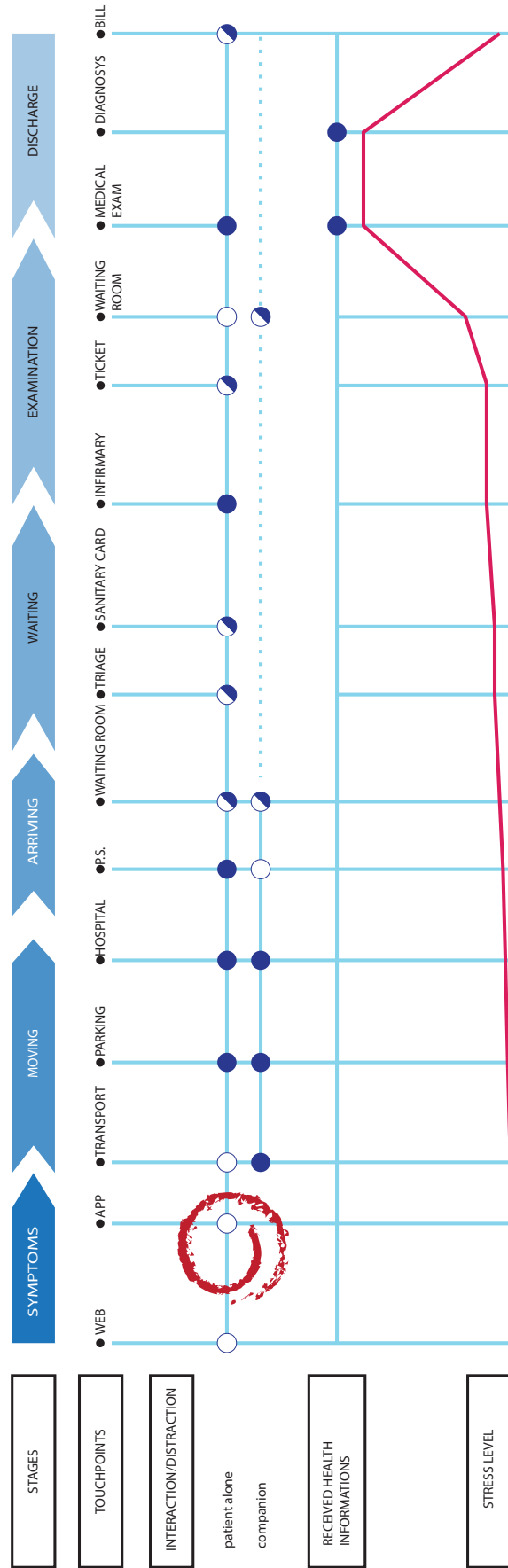
3.1.1 The App
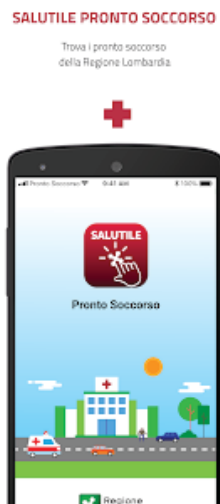
Homepage

Which datas are avaiable? number of patients divided by code

Once the user installs the app, few informations appear

Are there more infos? Overcrowding level

What to do in a real emercency? Call 112

How is it helpful? turn on GPS and start the navigation

MAPPA

Visualizza i pronto soccorso
più vicini a te
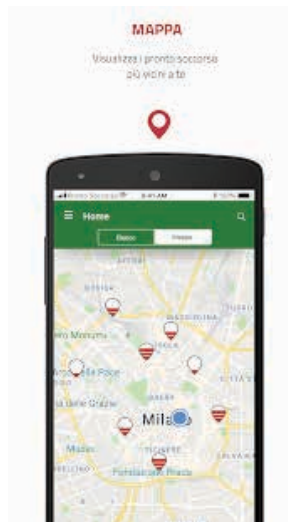
Once entered in the app, the map shows different ER and their level of overcrowding.

Attualmente in pronto soccorso

Codice	In attesa	In trattamento
🔴 Rosso	0	6
🟡 Giallo	4	18
🟢 Verde	14	19
⚪ Bianco	0	0
Totale	18	43

To receive more specific information, the user can be aware of the number of pleople divided by code.

As remembered by the app shortly after the first apertira, it should not be emulated in situations of serious emergency, in which it is necessary to act in the shortest possible time. For this reason it is remembered that the security number is 112, universal for any type of emergency. In case of need, in fact, calling the number will be an ambulance to go to the place where you need help, so as to save precious time. The application offers, in addition to the introductory presentation and the map of Milan where the degree of crowding is indicated, other useful information, such as:

The explanation of the color codes assigned to the triage.

Description of the degree of crowding, divided into three types, uncrowded, crowded and overcrowded, for three colors, yellow orange and red.

Other useful services. This section describes the other applications that can be downloaded by appstore:

SALUTILE reports, to collect health documents such as reports from the last 12 months.

SALUTILE reservations, to book health visits for themselves or family.

SALUTILE recipes, to collect electronic recipes. To buy them the printed copy is still necessary.

SALUTILE vaccinations, to save the vaccinations their children get.

SALUTILE gluten-free, to monitor the level of celiac disease, and check whether a product considered gluten-free has been eroded by the NSS.

ZAMPA E ZAMPA, the app to adopt dogs and cats on the Lombard territory or to search for your lost animal.

This means that there are six apps related to health services provided by the Lombardy region.

The salutary app records 424 downloads, with an average rating of two and a half stars out of five. Reading the reviews left by users, one problem encountered is the inaccuracy of the information given. In fact, some users found themselves choosing an emergency room through the app which was not very crowded, and then, once they arrived, they waited for hours before being visited. Since the main feature of the HEALTHY - First Aid application is to offer the degree of crowding of the PS considered, it is understandable that the reviews were so low. Another problem en-

countered by users is the lack of advertising for the app. such an application is potentially useful, and many users would have liked to have it available before choosing which hospital to go to. However, the lack of visibility led to discover SALUTILE late.

4 Improvement

4.1 The App

To better understand how the app is working and how it can possibly be improved, it can be described by two main characteristics. First, it gives generic information, this means that is not built to change depending on the user. It doesn't ask any kind of question related to the user himself, the informations it gives are the more generic possible. Consequently they adapt to any type of user who can use the app. Other characteristic is that the informations are just about the ER. It is not possible to delve into any other topic within this app. No information relating to your health status is received. The goal with

	SPECIFIC	GENERIC
ER INFOS	Report suitable ER	Report avaiable ER
MEDICAL INFOS	Give specific infos	Give generic infos

which the app was created is clearly to guide the patient from the place where he is to the nearest or less crowded emergency room. The relationship with this app does not exist before and it makes no sense to exist once the patient reaches the emergency room.

	SPECIFIC	GENERIC
ER INFOS	Report suitable ER	Report avaiable ER
MEDICAL INFOS	Give specific infos	Give generic infos

The App as it is right now. considering the information the patient could receive before arriving in ER, tha actual service use a small amout of potential. Also, it is supposed to give precise informations, but as explained, it's based on a wrong alghtorithm.

However, knowing which ER is the most avaiable at the moment is useful for the patient, as one of the main pain point is the long waiting time.

Regarding this specific issue, in conclusion, solving the algorithm may seem like the solution. However, mathematical models hardly apply to unpredictable situations such as the one we are studying. However correct the formulas may be, the behavior of medical personnel or users may not be correct.

	SPECIFIC	GENERIC
ER INFOS	Report suitable ER	Report avaiable ER
MEDICAL INFOS	Give specific infos	Give generic infos

One of the main problem underlined by the medical staff is the wrong choice of ER made by patients.

Patient would go to the nearest Emergency Room because they are in pain, the impression is that the nearest one is the fastest to reach. That is true most of the time, except traffic jam, but the nearest one is not necessarily the best.

Not all the ER offer the same kind of visits, nor have the same specific equipment. If the health issues is related with a specific part of the body, it's better to be visited by a specialist.

To solve this problem, few questions about the kind of illness are enough to understand wich kind of specialist is needed in that situation. In this way, patients will be already in the right place, and won't need to be transferred in a different ER to find the specialist they need.

Not all the illness are indendifiable through few questions, and it's essential to not suggest the wrong ER bacause of a wrong diagnosys.

	SPECIFIC	GENERIC
ER INFOS	Report suitable ER	Report avaiable ER
MEDICAL INFOS	Give specific infos	Give generic infos

As already underlined both by patients and by medical staff, patients want to be treated as humans. They want to feel they are not just a number. So, it is needed a specific area dedicated to the patient himself. And after all, it could also come in handy for nurses and doctors dealing with the user. Arriving to the Triage, a lot of specific question can be avoided if the patient already answered them through the app. It is necessary to check the patient's health even if he has already answered some questions through the app. But as previously illustrated by Meister, the feeling for the patient will be that the path has already begun. That in some way his presence is already known. Useful informations such as taken drugs, specific phisical problems, previous chirurgical operation, allergies. Also, if the patient is unconscious, that can happen for different reason, having a profile on the app is useful to have more informations.

	SPECIFIC	GENERIC
ER INFOS	Report suitable ER	Report avaiable ER
MEDICAL INFOS	Give specific infos	Give generic infos

People have in general a lack of specific culture related to healthness, as established by different doctors during the interviews. Having a specific section of the app to understand and learn about it will bring consciousness to patients. There are different kind of informations that should be found there. First of all, information related to everyday life, not just emercency. The difference between booking a visit with the family doctor and going to the emergency room must be clear in the patients' mind. General information on a healthy lifestyle, or good habits to be respected to guarantee a better state of health for oneself and loved ones. All these information should to be found in the waiting room also.

STAGES

SYMPTOMS | MOVING | ARRIVING | WAITING | EXAMINATION | DISCHARGE

TOUCHPOINTS

● WEB ● APP ● TRANSPORT ● PARKING ● HOSPITAL ● P.S. ● WAITING ROOM ● TRIAGE ● SANITARY CARD ● INFIRMARY ● TICKET ● WAITING ROOM ● MEDICAL EXAM ● DIAGNOSYS ● BILL

INTERACTION/DISTRACTION

patient alone

companion

RECEIVED HEALTH INFORMATIONS

STRESS LEVEL
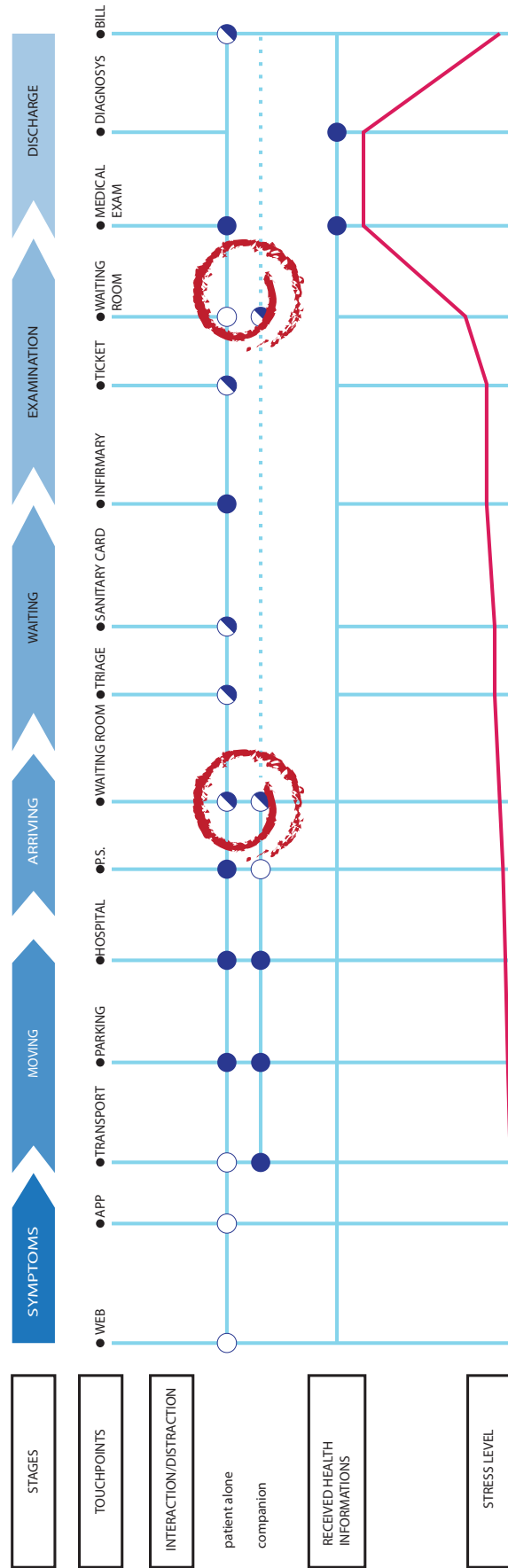
4.2 Waiting Room

As previously analyzed, most of the time passed in ER is in Waiting room. the patients want to feel calm, to be aware of what's happening. They don't want to feel the time passing.

Waiting room needs to be divided and analyzed in different fields, first of all the enviroment.

FURNITURES

TOILETS

ENTRY

EXIT

TRIAGE
DESK

LIGHTS
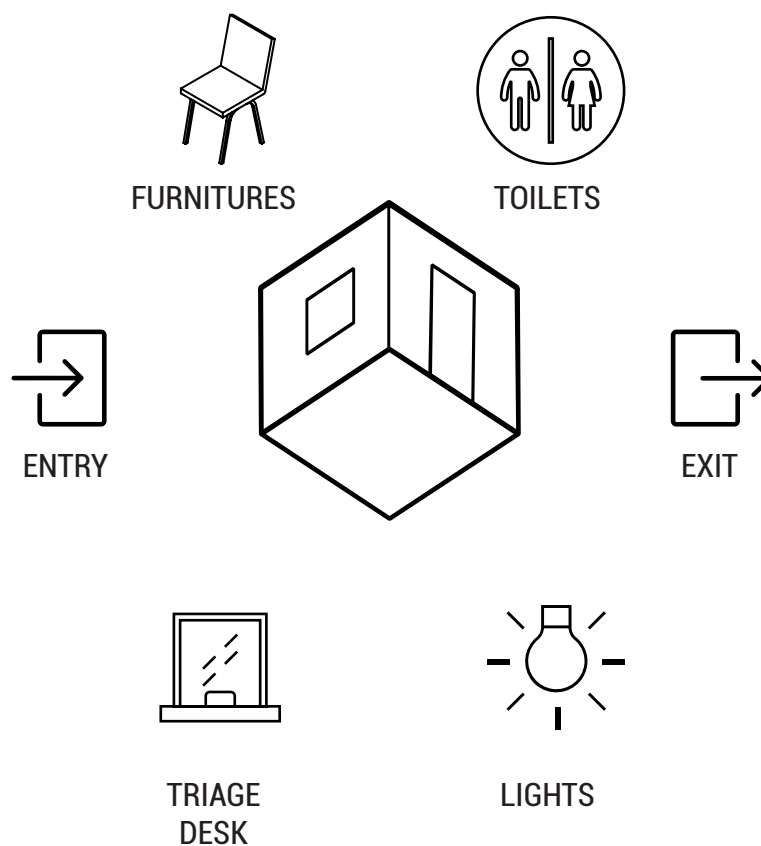
The enviroment is made by alla the object present in the waiting room, needed to be considered a room indeed.

These six different characteristics are common in all the ER, but each of them has a different choice of positioning. For this reason, the improvement in this field will be analysed but it won't be tha main focus, because the solutiont won't be suitablie for all the PS. Working on specific hospital can be useful to solve specific issues, but the common shared problem is solving waiting time.

4.2.1 Improvements
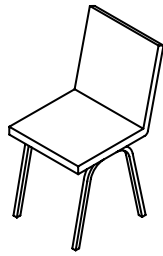
FURNITURES

Furnitures set the overall atmosphere of a room.

As Allison B Arnell[1] fount out, a warm appearance of waiting room is more pleasant, related to cold colors and dark lighting. This appearance affect the behavior of the user, make him calmer and more open to interact with medical staff in a positive way.

in particular, the choice of chair, both in appearance and in function set the way people behave in waiting room. Finishes and fabrics should be selected for attractiveness, but they need also to be easy to mantain. "no one wants to sit on a stained or dirty-looking chair"[2]. It's necessary to always remember that the analyzed place is related with healthcare. All the furnitures need to be as clean as possible.

They should also be considered for their contribution to the acoustics of the space, as unwanted noise can cause or exacerbate stress in patients and visitors.
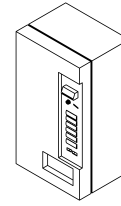
VENDING MACHINE

Vending machine have a big role inside the waiting room. There are two different kind: coffe machine, presented with different kind of coffee, from cappuccino to espresso.
the other kind sells both food and beverage, depending on the kind and the suppliers, but mostly there are unhealthy snacks.

Paying attention to which kind of food is given to the user is essential to trasmit a good message. Joan Suchomel observed how in California, instead of the snaks, some hospital started to use healthy vending machines, providing vegetables, light meat. From a medical point of view, as found out by Univeristy of Navarra[3], fat foods and unhealthy eating habits can be related with a bigger amount of stress, leading to

1   Allison B. Arneill and Ann Sloan Devlin of the Connecticut College Department of Psychology published in The Journal of Environmental Psychology 2002
2   Design Solutions To Improve Waiting In Healthcare by Joan Suchomel | December 6, 2016 on Healthcare Design Magazine

3   Sánchez-Villegas A, Delgado-Rodríguez M, Alonso A, et al. Association of the Mediterranean Dietary Pattern With the Incidence of Depression: The Seguimiento Universidad de Navarra/University of Navarra Follow-up (SUN) Cohort. Arch Gen Psychiatry. 2009;66(10):1090–1098. doi:10.1001/archgenpsychiatry.2009.129

depression in worst cases. Vending machines can conseguentely be used to educate the patient to eat well.

A good example for this kind of vending machines is Healthy Nosh, a specialized company on fresh food, they offer whole meals to healthy snacks, suitable for all kind of user in waiting rooms, both those wo are staying for a shor amount of hours, than the ones who expect few hours of waiting time.
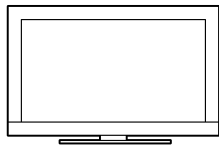
TELEVISION

The use of a television in waiting room is already happening in some of the main hospitals in Milan, although others, such as Ospetale Bassini, decided to avoid them.

The use of big screens need to be related to the reason why the user is in the Emergency room. For istance, Fatebenefratelli hospital use its tvs to let patient companion what the patient is doing. At the arrival, patient

On the other side, the companion would often check the situation of their loved one, and this can bring them to feel more the time passing by.
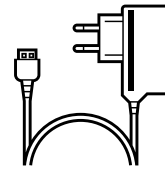
CHARGER

Most of the people going to ER bring phone with them. Due to le long waiting time and the use of the device, it could run out of battery quickly. This is an issue, because the user need to contact home, phone to dear ones in order to get distracted. A simple solution is having charging device in the room. To avoid most contact possible, the charger will be contactless. in this way it will last longer and at the same time it suits all kind of smartphone regardless of brand.

WI-FI

As suggested by Joan Suchomel, providing free wifi will help patient using their smartphone. It's up to them in which way, such searching for health information or just finding a way to escape the struggle of waiting.

TOILETS

Toilets are a main part of the waiting room in ER. Every ER needs to have one, separated

between man and women, and it should have an access for people with disability.

Each toilet can be divided into some essential objects, which it cannot do without to be considered as such. However, as toilets are now in some emergency rooms, they need to be updated.

Hospitals are linked with illness. Not only physical problems, but also diseases that can be transmitted from patient to patient, or from doctor to patient. Users want the hospital to be clean, as they want to be clean them selves.

SINK

For this reason, patients should wash their hands as much as they want. For a good hygiene, hands shouldn't touch the sink nor the tap to use it. Otherwise the use of the cleaning liquid would be erased.

For this reason the water tap should be provided with a sensor, that activates the jet of water when the hands are brought close to it to avoid contact.
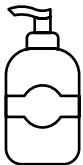
SOAP   HAND DRYER

The same way has to be applyed to soap dispenser as well as hands dryer. They both need to have a sensor.
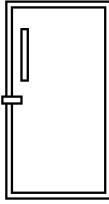
DOORS

Doors represent another way to get in contact with bacteria. This means that they need to change in order to have more satisfying service. There are two different doors in toilets room. The first one, to enter in the common space between man and women restrooms. The second is place between the dressing and the restroom itself. The beeds of these kinds of door are different. The one that separates waiting room and the dressing has the only value to open and close. The second one needs also to be closed with a lock from the inside. So, for the last one the contact can't be avoided. User needs to lock himself in the restroom in order to be sure his privacy is respected.

Improvement can be made on the main door. It has to be automatic. so, after the user has whashed his hands, can return to waiting room without touching it.

TOILET

The focus point in the restroom is the toilette itself. It has to be as self-cleaning as possible. The phisical interaction would be minimal, and le vebel of cleaness hight. A good solution for this part could be a complete automatic

restroom. This means that, after every use, it would clean all the parts of the toilet. But this kind of plublic restroom suite well parks, not closed spaces. This because the necessary time to clean it is around one or two minutes, and it's not designed to be used so frequently as it could be in emergency room. For this reason the solution would be a common toilet with a simple device.

In the back part of this toilet, produced by CWS, a device cleans the part of toilet seat it touches.

The toilet seat can rotate, easily allow the device to clean completely the surface. After each use, the CWS Paradise Cleanseat PRO extends a cleaning arm, grasps onto the seat and cleans and/or disinfects it in one complete rotation.

In this way the necessary time is around 15 seconds, during which the user would wash his hands. after he returns to waiting room, the toilet is ready for a new user.

MIRROR

Regarding less essential furnitures in the restroom, it's better to avoid mirrors. As Sasser et al.[4] found out, mirrors bring user s

to less perceive time. The example he made is related to elevators. while waiting for elevator, having a mirror allow the user to check his appearance, avoiding the thought of passing time. In everyday enviroment this works. But in Emercency Room it's different. First, users should stay in restroom as less as possible, to leave the seat to others. Secondly, there is the possibility that the appearance of the user is related with the issue that brought him there. Consequently he would possibly avoid to see himself in the mirror. For these reasons, ER restrooms better avoid mirrors.
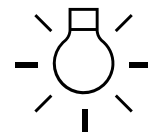
LIGHTS

Lighting in an environment influences the behavior of users inside.[5] This means that you can decide, depending on the positioning of the lights, what to give more or less importance within the environment of the waiting room of the emergency room, in the same way in which the study taken into consideration is based on the retail sector. An effective tool in this case is the use of light intensity. more illuminated parts will better attract the user's attention, while the shaded parts will overshadow. The areas that need to receive the most light, therefore, will be those that offer the most interaction.

Entrance and exit must be clearly visible, so that the user can easily identify them.

The vending machines, so as to attract the user to the purchase of the products, spending time and money on them.

4   Sasser, W.E., J. Olsen, and D.D. Wyckoff (1979), Management ofService Operations: Text, Cases and Readings. New York: Allyn and Bacon.

5   Quartier, Katelijn, Christiaans, Henri and Van Cleem-poel, Koenraad (2009). Retail design: lighting as an atmospheric tool, creating experiences which influence consumers' mood and behaviour in commercial spaces.

The triage desk, so that the patient is attracted to it, and in the same way the triagista can see it better and identify any physical irregularities that can help nurses see problems.

Entrance to the visiting room, where the patient will have to go when called.

The toilets' door is another of the places that will have to be illuminated more, as well as the interior of the bathrooms.

WATCH

Choosing whether or not to put a watch Inside the waiting room is not easy. On the one hand, the patient, or the companion, needs to be aware of the passage of time, to know that he has the situation under control. On the other hand, however, having the time under control all the time, as already analyzed by Meister, could lead to an increase in stress. In fact, the less the user is aware of the time spent waiting, the less he will suffer.

As used in casinos, for example, the absence of watches helps to distract and lose track of the passage of time.[6]

The best solution turned out to be the presence of a clock, but to be reached only if interested. Around a corner, for example. In this way the gaze of the patient or the companion will not be able to meet him randomly, but will have to go and look for him because he is interested. Positioning a watch in this way does not cause the user to lose control, who will not risk contacting the staff for information.

MUSIC

Music has the power to change the mood of the person who listens to it[7].

Both the type of music and the presence or absence of it alter the user's status. In particular, listening to music considered "calm" reduces stress levels. For this reason, it is recommended that there is a musical motif in the waiting room of an emergency room. However, this improvement would not affect the patient's judgment of the relationship with the hospital, but would manage to calm him down.

[6] Casinos: An inside look at casinos including their "traps", psychological effects,and odds of winning Alex Silvestro, Pat Lubin, Tom Gallagher, Mike Cucinotta with Julie M. Fagan

[7] Tansik, D. and Routhieaux, R. (1999), "Customer stress-relaxation: the impact of music in a hospital waiting room", International Journal of Service Industry Management, Vol. 10 No. 1, pp. 68-81

5. Opportunity

5.1 Mental Distraction

How can distraction be achieved?
First of all, it's needed to analyse different kind of ways through wich the patient can be distracted. IBy distraction we mean deliberately shifting the user's focus in the direction you prefer. In the specific case, attention must be diverted from the problem of waiting, boredom, and possibly also of the situation we are experiencing, in order to favor an alienation.

POSTERS
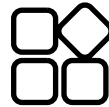
APPS

BROCHURES

PHONE

BOOKS

HEALTH
RELATED
MACHINES

There are different kind of information that can be given to the patient, to let him be calm. they can be divided in two big groups: related to health or regarding other topic.

Inside the big group related to health, the informations can be linked to public health, to specific problems, but also related to the situation of the patient himself in that moment. It can be useful to For his companions in the waiting room knowing what's happening on the other side of the room, so they can be updated where is their loved one and what is he doing, which kind of exams and what are the responses. Less specific information, but still related with ER and healthcare, it's useful to know when is necessary or not to go to ER, What the color code means has to be clear too, and how colors will be substituted with numbers.

Last part of this group is made by all the useful information the patient can use in everyday life. How to wash hands, when wearing sanitary mask. On the other side, a different kind of distraction, not related to healthness but just with killing time.

5.1.1 Posters

For posters are meant all the prints appliable on the walls. The dimensions are standard, 70x100 cm in portrait format. They don't need to be framed, but it is good that they are protected. There is no need for the patient to be close to read them. Posters need to be clear, to give few, clear informations.

POSTERS

APPS

BROCHURES

PHONE

BOOKS

HEALTH
RELATED
MACHINES
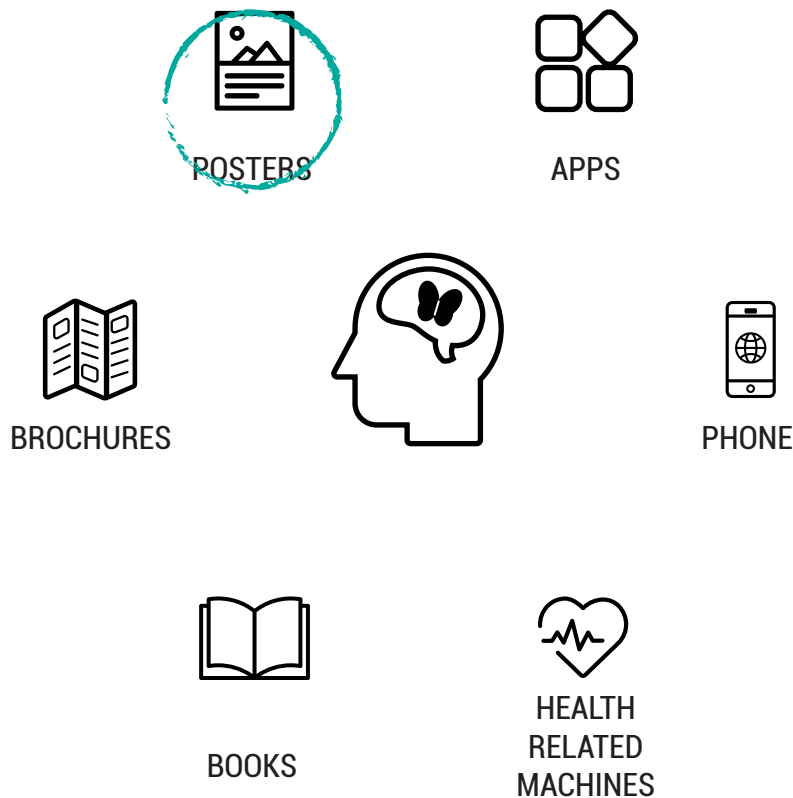
Poster haven't interaction with the customer. So what they communicate need to be one way. As found out, lot of patient are calmer and more relaxed when they have positive distractions. It helps patients feel the passing time less. There's a high degree of evidence that nature-based distractions, for istance an artwork printed on a poster, help make patients feel calmer and more relaxed, as well as less aware of time ticking away[1].

But posters can also communicate important information that the patient may need at the moment or in the future. Using posters as a means of communication would use another means of communicating with the user.

_____
1   Design Solutions To Improve Waiting In Healthcare by Joan Suchomel | December 6, 2016 on Healthcare Design Magazine

### 5.1.2 Brochures

A brochure is an informative paper document (often also used for advertising) that can be folded into a template, pamphlet, or leaflet. A brochure can also be a set of related unfolded papers put into a pocket folder or packet. Brochures are promotional documents, primarily used to introduce a company, organization, products or services and inform prospective customers or members of the public of the benefits.

POSTERS

APPS

BROCHURES

PHONE

BOOKS

HEALTH
RELATED
MACHINES

Brochures, or informative material in general, needs to be useful before, during and after the visit in ER. Before the visit the material will be useful for the patient and the doctor to write down symptoms and general datas about him. In this way the patient will be able to clear his mind a bit before the fisit, writing down what he feels. In fact, as described by nurse Musumici, it often happens that the patient gives different information to different people, because of the stress, he is confused. Often the hurry bring the patient to answer as fast as they can, instead thinking about their pain.

Brochure can be informative material, make who is waiting aware of medical information, generic or specific. Informative material can make patient understand better the importance of medical staff. As underlined by Casarodo, patient, especially patient companions, often understimate the work behind their visit. They want to be always taken care, the time passed on other patient is felt as lost. Make them understand that some time is necessary to be visited can calm them down and make nurse work easier. Brochures have a lot of potential as a way to interact with the patient.

5.1.3 Books

Books have the ability to take the reader's mind to another time and space. Depending on what the writer wishes to try, the reader follows the plot and lets himself be carried away.

POSTERS

APPS

BROCHURES

PHONE

BOOKS

HEALTH RELATED MACHINES
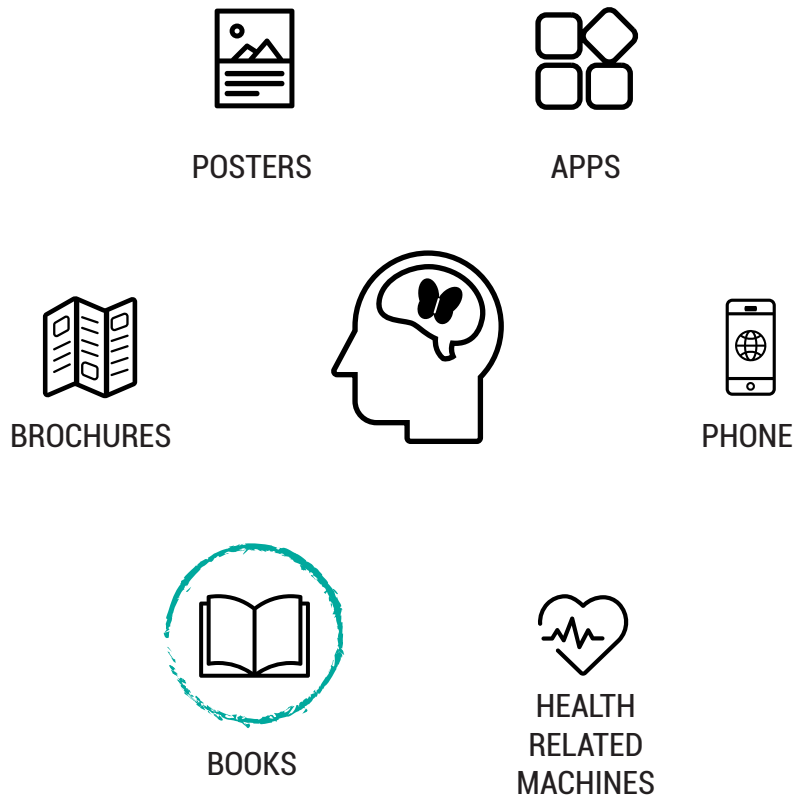
Books are a great way to distract people and make them pass a good time. A research found out that 95% of people would prefer reading a book to feel the time passing faster compared to television (41%) or mobile phone (57%)[1]. Although a book is manly brought from home, some hospitals tested libraries in hospital enviroment, having good responses. The emergency room of Policlinico of Milan recentely introduced a library in waiting room, through the bookcrossing way. To better understand how this system work, Dalli and Ciorciolani describe it as a gift-giving community. In particular, Bookcrossing members leave their books at a public space, as a gift for someone they do not know. In this sense, Bookcross is an alternative system of book exchange, based on gift-giving, which parallels and partly challenges the traditional market exchange system[2]. The idea

1	Clinic Design: Enhancing the Patient Experience through Informed Design, by Gary A. Nyberg and Christine Guzzo Vickery

2	D Dalli, M Corciolani - NA—Advances in Consumer

of using bookcrossing instead of having the hospital investing in it makes sense. In this way, the hospital has no need to spend any money on it, it's just up to the users. Of course the medical staff have to control now and then which kind of books are there, or the condition of them, but the amount of work is totally different.

5.2.4 Health Related Machines

Having different kind of health machines inside waiting room woul keep the focus on the healthcare, tha patient will pay attention to them, but at the same time they will be distracting enough to make the user less aware of the time passing.

POSTERS

APPS

BROCHURES

PHONE

BOOKS

HEALTH
RELATED
MACHINES
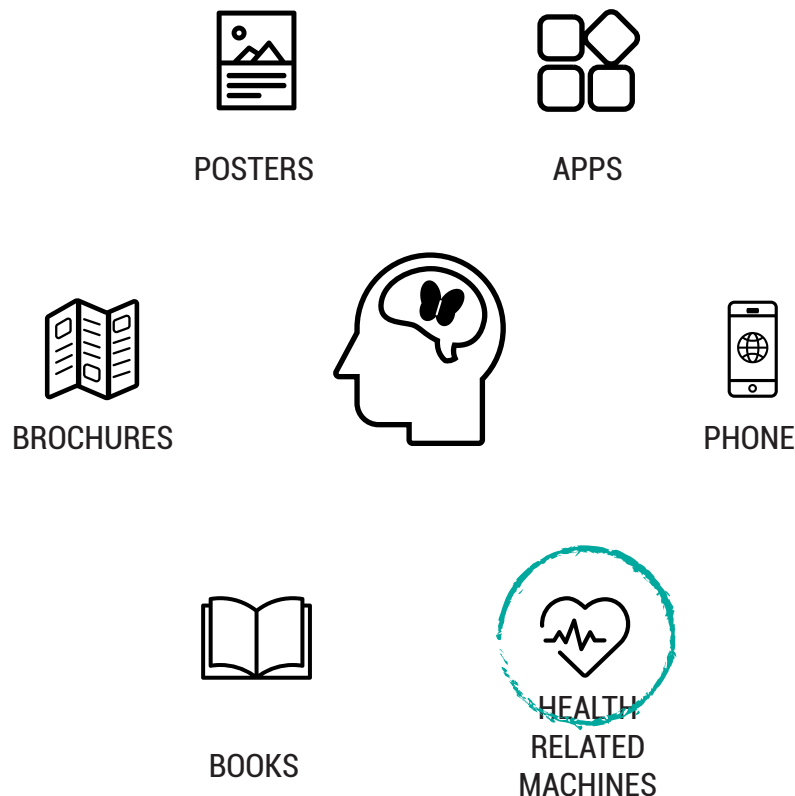
The kind of machines that can be used has to be the less complicated and alarming possible. They need to be used to patient waiting for their turn or their companion. This means that the medical staff shouldn't be present when the machine are used, otherwise the overall idea of help nurses and doctors working better won't be appliable. Also, these machines need to bring general information, the best version of what the user could have home.

As suggested by Johan Suchomel, the service need to give patient something useful to do while they wait[1]. Providing access to free services such as a blood pressure test station, a scale or a meter to meisure height. A blood pressure test is a simple way of checking if it is too high or too low. Blood pressure is the term used to describe the strength with which

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1   Design Solutions To Improve Waiting In Healthcare by Joan Suchomel | December 6, 2016 on Healthcare Design Magazine

your blood pushes on the sides of your arteries as it's pumped around your body.

A scale is useful too, lot of patient lost the count of their weight, they don't have a precise idea of how much they weight when they reach ER.

All these tests are more useful for the patient than the doctor. Medical staff will do these exams again if necessary, but the goal is to make the time passing.

5.2.5 Phone

It's considered phone a smartphone. nowadays internet access is taken for granted. Differences between kinds of phone shouldn't be considered, as the service needs to include all the kinds.

POSTERS

APPS

BROCHURES

PHONE

BOOKS

HEALTH RELATED MACHINES
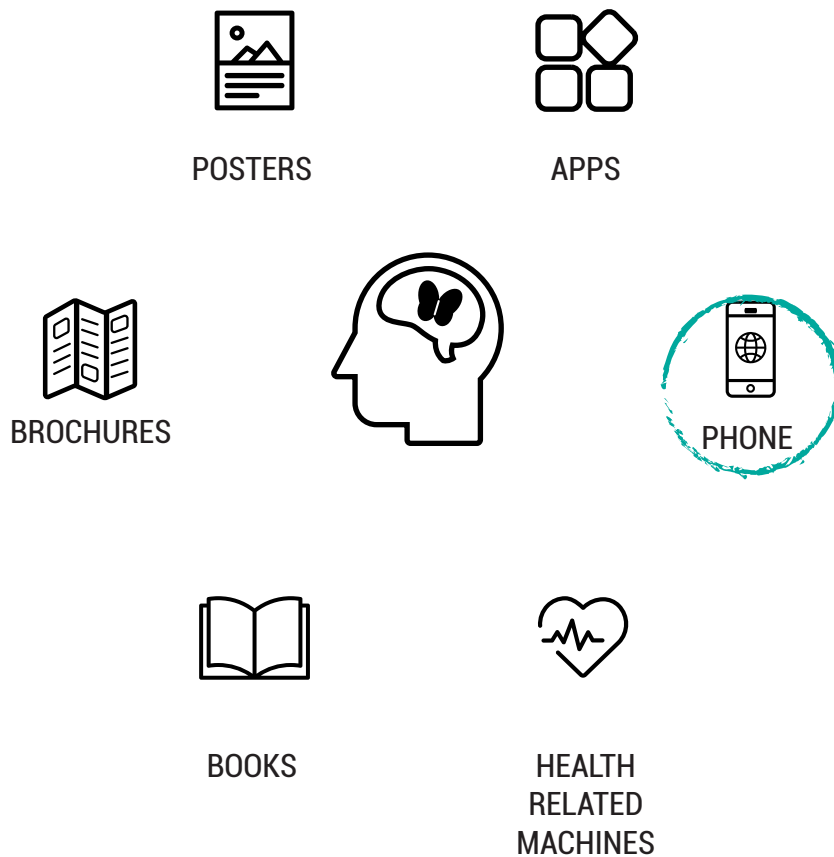
First of all, patients need to be able to use their phone. It's necessary to have contact with loved ones, friends, and internet. As David H Maister found out, solo waits feel longer that group waits[1]. Hospital should provide free wi-fi to assist patients using their

smart phones to access health information; At the same time, phone is a personal object, can be also used to isolate with friends, while the user is phisically in waiting room. This make the interation with phone complicated. It's up to the patient to use it as he wants. The hospital can help anyway providing internet access and charging station.

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1   'The Psychology of Waiting Lines'
 David H. Maister 2005

5.2.6 App

Application software (app for short) is a pro-gram or group of programs designed for end users, to help people perform an activity.

POSTERS

APPS

BROCHURES

PHONE

BOOKS

HEALTH
RELATED
MACHINES

Apps, like brochures, can be used in differ-ent ways depending on the goal they need to reach, what they need to comunicate.
For this reason, is necessary to understand what the patient need to do and to know to feel calm, the most desired feeling under-lined by patients[1].

1   Allison B. Arneill and Ann Sloan Devlin of the

Connecticut College Department of Psychology published in The Journal of Environmental Psychology 2002

Informations

These information are useful in everyday life. can be related with healthcare, lifestyle.

Washing hands

Flaminia Gentiloni, doctor, describe why and when we need to wash our hands.

The microorganisms that normally live on the skin, as well as those that dwell are not all nocive: some perform useful functions.

However, among them, pathogenic microorganisms, responsible for a large number of diseases, can hide and proliferate.

The immune system is prepared to cope with these microorganisms. Careful washing, performed in the right way and with a suitable product, is sufficient to eliminate most of these microorganisms.

When to wash your hands

when handling food, because the bacteria that we carry on our hands could pass to food and be ingested.

After sneezing or blowing your nose.

After going to the bathroom and after changing a baby's diaper.

Wash your hands when entering or after having been in contact with a sick person, first

in order not to transmit any pathogenic microorganisms to the patient, then to eliminate those that may have been transmitted to us.

after handling money or using a means of transport (bus, taxi, car etc.);

after having been in contact with animals (including pets, even if we are sure they are "clean").

Here are shown two different ways to communicate the same message: how to wash our hands.

It's important that these kinf of information can be shared and understood as fast and as clear as possible. in the first example, all the non-italian speaking are completely cut out.

Translated into italian by Ministero della Salute from "Hand Hygiene - When and How",World Health Organization, August 2009.

The World Health Organization, on the other side, put a litthe written text below each clear image. In this way, as we already analyzed the specific target in Emergency room doesn't exist[1].

The language of illustration is consequently the best to use and the more international

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[1]	L' ospedale accogliente - il design per gli spazi d'attesa dell'A.O. Fatebenefratelli e Oftalmico di Milano Giulia Gerosa, Elena E. Giunta, Luciano Crespi,2012

possible.

When it's necessary wearing a sanitary mask Michele Riva explains when is necessary or not to wear a sanitary mask.

The masks are effective only when they are used in combination with frequent washing of hands with soap and water or with alcoholic solutions.

The mask is disposable and, as such, should always be replaced, whenever it is removed, even if only momentarily. At the time of removal, it must be removed as if it were contaminated and therefore it must never be lowered from the mouth area, but from the side elastics, otherwise there is the risk of contaminating the hands. Furthermore, when wearing it, special attention must be paid to small details; the beard, for example, could reduce the adherence of the mask to the face, making it totally ineffective. It is also wrong to take off the mask to answer a phone call, even if it is then immediately worn. Furthermore, the mask is often used only to cover the mouth and not the nose. All this makes the use of the mask totally useless.

Healthy lifestyle

What is considered a "healthy lifestyle" including the following parameters: non-smoking (whether you have quit or never smoked), an optimal body mass ratio (BMI 18.5–25kg / m2), constant and continuous physical activity (ca. 3.5 hours / week), a healthy diet (upper percentage of a healthy diet score including fruit and vegetable consumption), and the moderate consumption of alcohol (5–15g / d for women and 5–30g / d for men)[2] .

The components that define a healthy lifestyle are different, from physical activity to a varied diet. But one must define what is meant by physical activity. Bodily movement that is produced by the contraction of skeletal muscle and that substantially

increases energy expenditure[3].

Physical activity can be divided into two parts:

Exercise, a physical training designed to develop physical fitness. An example of exercise is going to train in the gym. That is, an activity that has the purpose of carrying out physical activity.

Leisure Activity, physical activity carried out during free time, of one's own will, which involves physical effort. For example, taking dance lessons has a physical consequence, but the goal is to learn the steps.

Both activities are important, and doing at least one of them is essential for a healthy lifestyle.

2   The combined effects of healthy lifestyle behaviors on all cause mortality: A systematic review and meta-analysis, M.

Loef, H. Walach / Preventive Medicine 55 (2012) 163–170
3   Definitions: Health, Fitness, and Physical Activity. Corbin, Charles B.; Pangrazi, Robert P.; Franks, B. Don, 2000

6 Designing the Service

6.1 The name

I decided to use the app name, the user has already heard the name and will not have to use another one. In addition, services that have to do with public health and users' health must not conflict with each other. There must be no competitors in a similar service, funded by the state and available to citizens. Having multiple services related to this field that can go into conflict, and forcing the user to make a choice is not constructive. The primary objective must be the patient's well-being, not to excel over other services.

6.2 The Logo

There are three logos to take into consideration.
First, Emercency Room logo.

This logo represents Red Cross.
There are two elements that make up the Italian Red Cross mark: the emblem of the Red Cross, placed within two concentric circles of red color among which is the inscription
"Geneva Convention 22 August 1864"; and the writing in full "Red Cross Italian ". These elements cannot never be separated.[1]

Secondly, the Star of Life.

The Star of Life is a blue, six-pointed star, outlined with a white border and usually featuring the Rod of Asclepius in the center. It is now a globally recognized symbol of Emergency Medical Services in multiple countries. The six branches of the star represent the six main tasks executed by rescuers all through the emergency chain:
Detection: The first rescuers on the scene, usually untrained civilians or those involved in the incident, observe the scene, understand the problem, identify the dangers and take appropriate measures to ensure their safety on the scene.
Reporting: The call for professional help is made and dispatch is connected with the victims, providing emergency medical dispatch.
Response: The first rescuers provide first aid and immediate care to the extent of their capabilities.
On scene care: The EMS personnel arrive and provide immediate care to the extent of their capabilities on-scene.
Care in transit: The EMS personnel proceed to transfer the patient to a hospital for specialized care. They provide medical care during the transportation.
Transfer to definitive care: Appropriate

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1   "Manuale di Comunicazione istituzionale,   Croce Rossa" 2017

specialized care is provided at the hospital[2]
Third, the Lombardy Region Logo.

Rosa Camuna is the official brand of the Region Lombardy since 1975, the year in which the design team composed of Bruno Munari, Bob Noorda, Roberto Sambonet and Pino Tovaglia wisely interpreted the rock engraving of the Camuni who lived in Valcamonica during the Iron Age.[3]

This logo will communicate the borders of the application, including just Lombardy hospital in the avaiability section. Also because making choice regarding hospital is easier within region's borders.

So, i started to combine Lombardy Region logo and red cross logo. The two symbols are similar, helping finding an hybrid.

In this phase I used as the main color the region's, Pantone 356 C. The red is discarded from the beginning. As it's already been shown as a colour for emergency, while the service is not referring to the real emercency situation.

Merging the two logos I created different solutions.

At the end of the creative process i obtained a simple and intuitive log .

it communicates the value of both red cross and lombardy Region.

But, in this way, it reminds too much the Pharmacy logo. To solve this issue, the color has to change. At this point the Star of life

2   Universal Medical Identification Symbol. Am J Dis Child. 1964;107(5):439. doi:10.1001/arch-pedi.1964.02080060441001
3   Brandbook Regione Lombardia, 2018, Regione Lombardia

helps me out.

The color is Pantone 127-14 C, half wai between the green of Lombardy and the blue of Star of life.
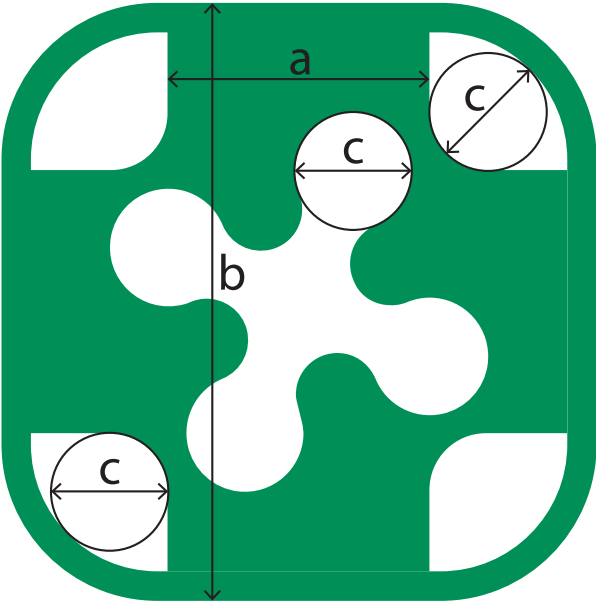
6.3 The New App

The app has been redesigned in order to better adapt to the needs of a patient who needs to go to the emergency room. The initial screen is the welcome one, the logo is clear, so that the user starts to get familiar with both the logo and the name of the service. The home screen has the two colors of the logo, white and teal, which convey calm and security.

SALUTILE
at your help
where you need it

SHOW ME   >

The claim for the service is "at your help where you need it". In this way, the user is informed that he can be reached where he is in difficulty, either through the app or, as we will see later, by other means in the emergency room. The patient involved must perceive that he is in the center of attention,

and that his problem has been taken care of. The logo at the top left will remain for all the application use screens, so as to be a point of reference and be pressed if you want to return to the initial screen.

Immediately after the welcome screen, the user receives a basic message. In case of an emergency, in fact, you must not use the application, but immediately call 112, the reference number for any emergency.

From this page, pressing the button with the frame, the call to the emergency number will be activated, so as not to waste precious time to intervene.

ARE YOU IN EMERCENCY?

PRESS TO CALL THE
EMERGENCY NUMBER 112

NO, I 'M NOT   >
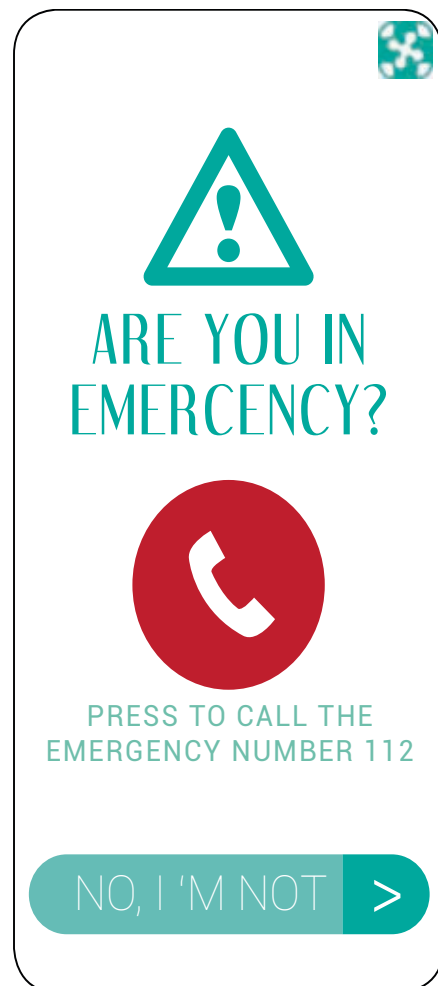
Unlike the previous application, this message was placed as the first screen after the welcome one, it is not preceded by the presentation of

the app or by the explanation of what can be done by logging in. It is important that this app is not used in emergency situations.

After making sure that the user is not in an emergency situation having pressed "no, i'm not" to continue, he will be asked to activate the GPS, in case he is turned off. Activating geolocation is necessary and use it for the application. First of all, because within the application it will be possible to indicate the hospital where you want to go and start browsing. In addition to this, it helps to map patient data, what emergency room he went to for example.

Another use of GPS activation is to realize something wrong with the patient's behavior in time. Once navigation has been entered, it is assumed that the patient will reach the destination, ie the first aid, chosen. If the user has a stop on the way and the GPS signal does not move for a long period of time, it is possible that he felt unwell. At that point, the application will ask the patient to confirm their health, with an acoustic signal that can also be heard with the phone in the bag. In the event that the patient does not respond to the signals sent to him, he will be contacted by 112 to check his condition.
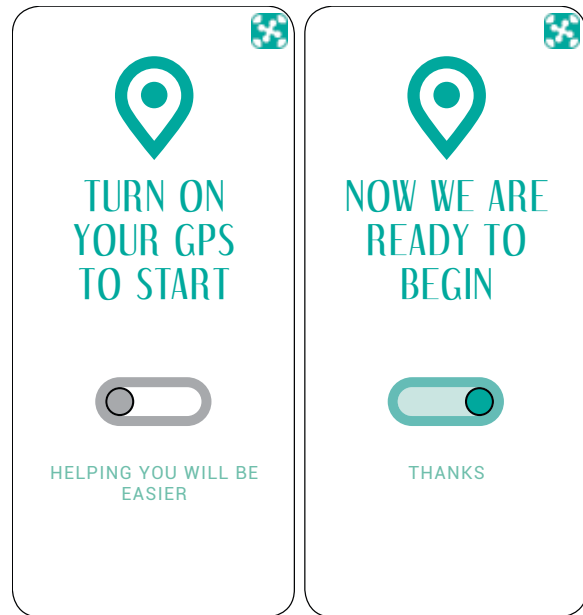
This system already exists for calls made to 112 in Italy, or 911 in America. Once you have dialed the number and made the call, that the line is cut off or if you remain silent, there is a good chance that the police will intervene if you can find the location of the phone. It's important to refere to the user personally, so he can feel engaged. In fact, the app says "helping you will be easier" before he turns on the GPS. The patient will feel as a part of the process. After he does what he was asking to do, the "thanks" sentence is necessary.

By selecting "find E.R." the map of the city of Milan appears. An icon with the logo colors will indicate to the user his position on the map. Other icons of different colors will bring attention to all the emergency services present in the displayed area. Below the map there are two choices. The patient can in fact choose whether to go to the nearest emergency room, or to the more fluent one, therefore with less waiting.

After activating the GPS of his phone, the user will have access to three different options:

The first "find ER" will help the patient find the emergency room to go to in order to solve their health problem.

The second, "find patient" makes it possible to communicate the progress of a patient's visit.

The third "health info" will provide the user with useful health information.

Each option takes the patient to a different path within the application, once he has made his choice, he can still return to the home page by pressing the icon with the application logo.

We analyze each option with the resulting development.

The nearest emergency room will bring the user to the hospital less distant, so that he can reach him as quickly as possible, but it is not linked to how crowded the ER is considered.

FIND EMERGENCY ROOM

THE NEAREST >
OSPEDALE SAN PAOLO

HOW ARE YOU GOING THERE?

TAXI

HOW ARE YOU GOING THERE?

GO!

TAXI
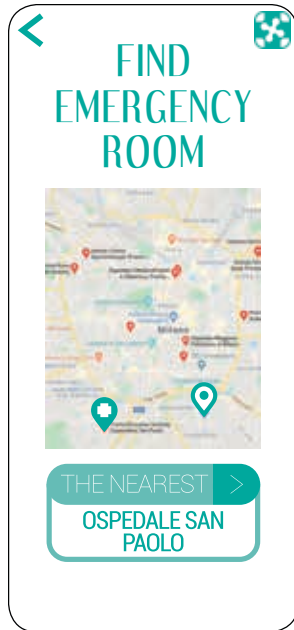
The fastest first aid is considered such by adding the expected wait to the time necessary to reach it. The degree of crowding is based on the NEDOCS parameters, but the factors that determine the result are entered by the doctors present in the first aid department. In this way, inconsistencies caused by the difference in the numbers of rooms available, or beds, and those used in practice are avoided. This difference occurs because some dynamics lead to the non-use of rooms, used for other departments. By using data provided by the doctors themselves, present in the field, the problem can be solved.

Once the hospital that the user wants to reach is displayed, the means of transport to be used needs to be selected.

There are four types of means of transport, by car, public transport, the walking route, and finally the taxi.

In the first three cases, navigation will take place through Google Maps, which will provide directions according to the medium chosen.

In the case of the taxi, on the other hand, the application will lead the user to call the taxi service, so that he does not have to worry about managing the move himself.

The arrival point is slightly different depending on the patient's choice. The movement on foot will take him directly to the hospital entrance, the one with public transport will follow the company on foot from the stop to the entrance. Moving by car must be directed to the emergency room parking lot.
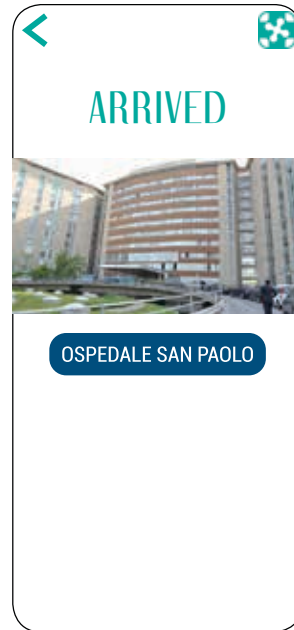
When the patient arrives at the hospital he previously selected, a warning of the destination reached appears on the screen. It's useful for the user to also see a picture of the enviroment on the screen, so he knows where to go.

Finding patient

Returning to the initial screen, another choice that the patient can make, in addition to finding the emergency room to go there,

is obtaining information relating to a patient who is already there. Once "find patient" has been selected, the hospital where the patient is currently located must be selected.

WHERE IS
HE/SHE?

OSPEDALE BASSINI

WHAT'S HIS/HER
NUMBER?

Number...
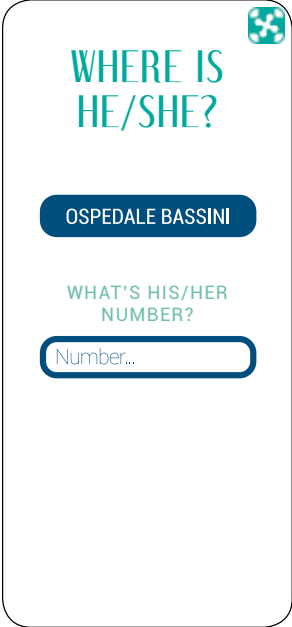
It must be verified, through various questions, that the patient gave his references to be found. It must not be possible to find a patient simply by typing the name. If this were done, the patient would not be protected from an invasion of privacy, or from the dissemination of sensitive data that he does not want to share.

WHERE IS
HE/SHE?

OSPEDALE BASSINI

001

HE/SHE IS
CURRENTLY IN

WAITING ROOM

To avoid such an unpleasant situation, each patient is assigned a number. This procedure also takes place now in every emergency room. The name or surname of the patient taken in charge is not used to protect him. Even during the emergency room visit, the patient is not called by name. The nurses refer to him by calling him with the number that was entrusted to him at the beginning of the visit.

WHERE IS
HE/SHE?

OSPEDALE BASSINI

001

HE/SHE IS
CURRENTLY IN

WAITING ROOM
CARDIOLOGIC VISIT

When the reference number is entered, you

can receive news on the development of the visit. It will be shown if he has already made the preliminary visit, if he is currently in the waiting room, or if he has already been taken to the hospital for a specialist visit. No connection is ever made with the patient's name, gender, or test results. With the diffusion of similar data one must be sure not to violate in any way the provacy of patients, already subjected to strong stress. What the Salutile app offers is a screen mirror present in the waiting room. Generic information, without clear links to personal data of the

WHAT ARE YOU LOOKING FOR?

FIND E.R. >

FIND PATIENT >
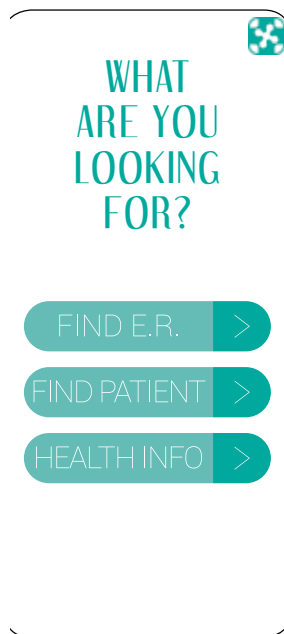
HEALTH INFO >

person.

They are sufficient to communicate with those who are not present, who in this way can be updated on the progress of the path of their loved one. The third and final option, "health info", concerns general lifestyle information. An example that can be given is how to wash your hands properly, that is the way OMS agreed on.

HOW TO

WASH HANDS >

In the case of this tutorial that explains how to wash your hands in the correct way, it is expected that the user can use it while performing the action itself. The screen then has a certain time to appear. In the upper part, right under the title, the symbol of a clock indicates the passage of time. The center icon illustrates how the action should be performed. Caption helps in understanding. In the lower part you can follow the progress of the different phases. Since the graphics are timed, the user can place the phone on the sink and follow the instructions without having to scroll through different images or zoom in.

After performing the whole procedure following each of the steps, the word "well done" appears on the screen. This communicates that the activity has ended.

WASH HANDS

WET YOUR HANDS WITH WATER

WASH HANDS

PUT SOAP TO COVER THE SURFACE OF THE HANDS

WASH HANDS

RUB YOUR HANDS **PALM** AGAINST **PALM**

WASH HANDS

R PALM OVER **L** BACK CROSS FINGERS BETWEEN THEM

WASH HANDS

PALM AGAINST **PALM** CROSSING FINGERS

WASH HANDS

BACK OF **FINGERS** AGAINST THE OPPOSITE **PALM**

WASH HANDS

ROTATE RUB OF **L THUMB** IN THE **R PALM** AND VICEVERSA

WASH HANDS

RUB WITH **FINGERS** OF ONE HAND THE **PALM** OF THE OTHER

WASH HANDS

RINSE YOUR HANDS WITH **WATER**

WASH HANDS

DRY HANDS WITH A DISPOSABLE **TOWEL**
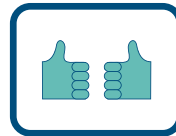
WASH HANDS

USE THE TOWEL TO TURN OFF THE **TAP**

WASH HANDS

WELL DONE!

6.4 The new communication

The new communication arrives directly in the emergency room waiting rooms. Together with the app it is part of the service. In each emergency room, areas will be organized where the brochure containers will be located.

This communication material is organized as a leaflet. this means that two facades are available, each divided into three parts, for a visual total of 6 different contents. The leaflet is closed on itself, so once folded it will show only one face.

The patient can take a brochure to fill it out or use it at any time. The brochures will be of different colors to divide them into different topics. The turquoise brochures will be related to the patient's health. Those of pink or red color will be aimed at a female audience. The yellow color distinguishes the material related to leisure, to distraction.
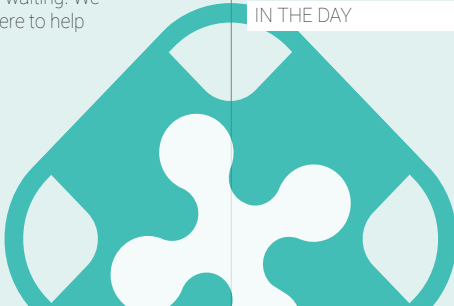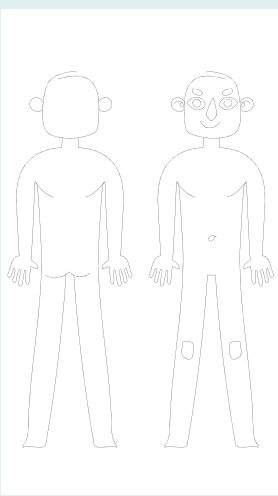
Starting with the turquoise brochure, the patient will see the presentation of the service on the exposed sides when he finds the material. The writing on the first page says: "Welcome to one of the emergency rooms supported by Salutile. Use flyers with Salutile logo to better communicate with medical staff, get information about a healthy lifestyle, or distract yourself while waiting. We are here to help you! "

From this the user will understand that the service is active in more than one emergency room, there are multiple types of flyer, which all bear the same logo, and which may have different functions. This starts a relationship with the user.

Remaining on the same side of the home page, another important information is given to the user: "before". This means that the use of this flyer is meant to be before the visit.

SALUTILE

BEFORE

This flyer was designed to be used before the visit with the doctor, in order to help you write down the information that we may need to better know your case and your current situation. You can deliver it to the doctor when he receives you.

Welcome to one of the emergency rooms supported by Salutile. Use flyers with Salutile logo to better communicate with medical staff, get information about a healthy lifestyle, or distract yourself while waiting. We are here to help you!

FIRST NAME

SURNAME

M   F

TAX CODE

DATE OF BIRTH

PHONE NUMBER

VISITING EMERGENCY

ROOM OF

IN THE DAY

HELP US **TO HELP** **YOU**

What's the level of pain that you feel?

how long has it been going on?

has this happened before?

do you have any allergies?

circle where you feel pain

what medications are you currently taking?

How did it happen?

"This flyer was designed to be used before the visit with the doctor, in order to help you write down the information that we may need to better know your case and your current situation. You can deliver it to the doctor when he receives you. "

We recognize important information for the user in this sentence too: the flyer will serve in the relationship with the doctor who will take care of him, and can be delivered to him. So the flyer takes on another value for the patient. The information that the patient will mark in the flyer is already in the possession of the medical staff. However, the idea of taking time out by writing down one's health, and then communicating directly with a doctor, can calm the patient. The sensation will no longer be that of having a relationship mediated by the nurse present in the emergency room.

In the third part of the same façade, the patient can start filling in the flyer with general information regarding his person. He must indicate his name and surname, gender, tax code, date of birth and a telephone number. You can also mark the name of the hospital in which it is located and the day of the visit. As mentioned, the service extends to several emergency rooms, therefore the material cannot be customized for each hospital.

Moving on to the part on the back, which is also divided into three different sections, you will find more specific questions, relating to what happened, symptoms, and how it happened.

In the upper part, the three pages form the writing "help us to help you". The user must feel an integral part of the process. A process that, in order to function, needs active patient contributions.

In the leftmost part there is a figure on which the patient can indicate where he feels the problem is.

Immediately after, continuing with the page in the center, the patient must answer some questions:

"What's the level of pain that you feel?" This is a question that the patient hears himself

asked as soon as he arrives in the emergency room. It is important to realize how much pain the patient is feeling because it can be linked to the health problem he has at that moment.

"How long has it been going on?" the duration of the problem also plays a fundamental role in the management of the problem.

As already analyzed, at the triage visit an indication of pain greater than 8, on a scale from 1 to 10, passes directly into yellow code. However, those who truly experience pain of that intensity will not be able to complete a questionnaire. So the scale indicated with the use of smiley faces on the flyer's page is indicative, but not as truthful as the one made during acceptance.

Has this happened before? Knowing if there have been previous manifestations of the same disorder can help doctors make patient health decisions.
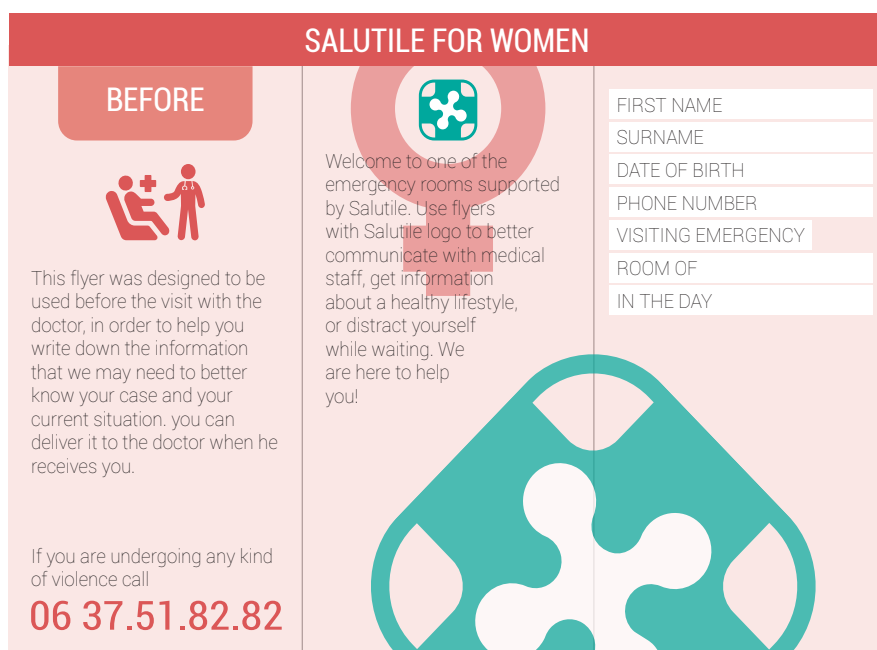
do you have any allergies? This is also one of the fundamental questions asked when the patient arrives in the emergency room. In fact, a patient with allergies must be immediately reported to the medical staff. Having time to fill in the answers to these questions can lead the patient to weigh his answers more carefully. In this case, compensating for a forgetfulness can be fundamental for the well-being of the user.

what medications are you currently taking? Some problems can arise from taking medications. Hence the need to know what medicine the person being visited is currently taking.

How did it happen? The dynamics of an accident, or a manifestation of symptoms, can tell a lot about the problem. If a patient does not remember exactly how it happened, it is possible that he lost consciousness a moment before the accident, and this leads doctors to make different hypotheses. An inconsistency on what the patient said to the nurse and what he wrote on the pamphlet is a symptom to be taken into consideration in the same way.

The red colored flyers are aimed at a female audience. As previously analyzed, some women victims of violence turn to the

SALUTILE FOR WOMEN

BEFORE

This flyer was designed to be used before the visit with the doctor, in order to help you write down the information that we may need to better know your case and your current situation. you can deliver it to the doctor when he receives you.

If you are undergoing any kind of violence call
06 37.51.82.82

Welcome to one of the emergency rooms supported by Salutile. Use flyers with Salutile logo to better communicate with medical staff, get information about a healthy lifestyle, or distract yourself while waiting. We are here to help you!

FIRST NAME
SURNAME
DATE OF BIRTH
PHONE NUMBER
VISITING EMERGENCY
ROOM OF
IN THE DAY

emergency room to seek help that is not medical, but psychological. They need to know that they have support to be able to get out of an unpleasant situation, such as domestic violence. However, it is difficult to convince them to confess the problem, or to report who submits them. For this reason, a less direct approach, through a booklet to be filled in and delivered to the medical staff, can facilitate a similar choice for women.

The home page is almost the same as the one described above. The main difference is the writing at the top, "SALUTILE FOR WOMEN". This message communicates, even when the flyer is closed, to whom the message is addressed. The general information is the same except for the indication of gender.

The generic number for each victim of violence is indicated on the front of the brochure. The number 0637518282 is the number called "pink telephone". It has operators specialized in dealing with any form of violence, from psychological to physical. Taking the flyer that he will find in the waiting room, the user will have a reminder to save that number.

On the back, however, the figure on which he is asked to indicate where he feels pain is a woman. The first question that is asked is "How did it happen?". Also in this case the description of the dynamics of the problem plays a fundamental role. And, as mentioned, writing can be easier than speaking directly to a nurse during check-in. The woman who decides to answer this question will feel free, and will be able to deliver the closed flyer to the doctor who will receive it.

Do you need any psychological support? Admitting the problem is one of the first steps to acceptance, and ticking a box is easier than confessing a difficult situation.

"Give this flyer to medical staff, they will provide you help." Also at this point the patient is reminded to deliver the completed document to the medical staff, so that he can act accordingly.

"Remember, if you are a woman in difficulty the anti violence and stalking number is 1522 it's free and always active. "Not everyone knows that the reference number for women

HELP US   TO HELP   YOU

if you hurt yourself, how did it happen?

Do you need any psychological support?
Y   N

give this flyer to medical staff, they will provide you help.

circle where you feel pain

remember, if you are a woman in difficulty the anti violence and stalking number is

1522

it's free and always active. don't be afraid, we can help you. You can make it stop.
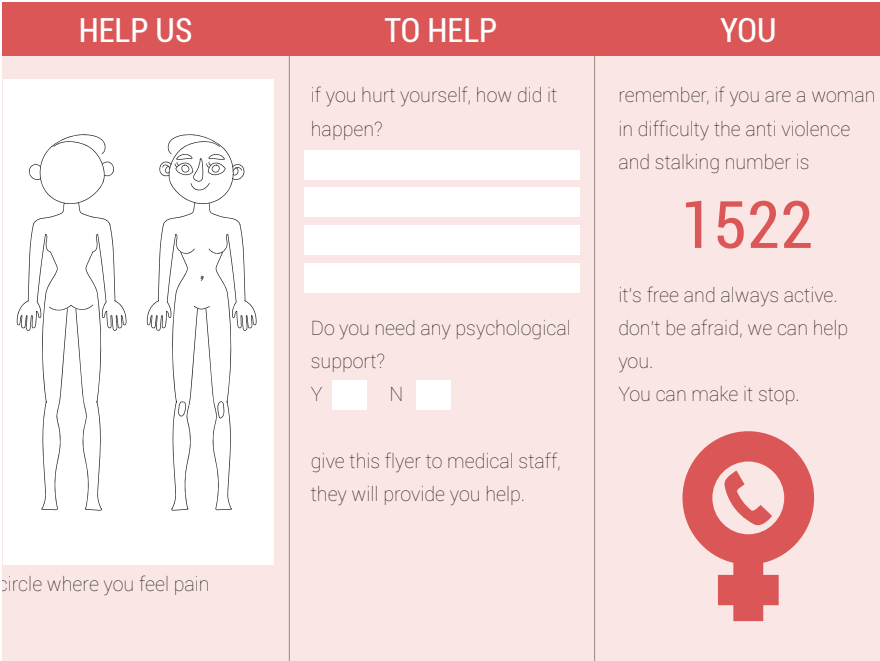
victims of violence is 1522, it is important to remember it for every need.

"Don't be afraid, we can help you.

You can make it stop. "The woman who is the victim of violence lives in constant fear that the situation may worsen, as described by the doctors interviewed. Talking to her about how the situation she is experiencing may end makes her think of a brighter future, in where the pain will end.

The third type of flyer that will be available to the user is "SALUTILE FOR FUN". it is a series of activities you can do within the first aid while waiting for your turn. The category highlighted on the front is "during". "This flyer was designed to be used during waiting time in emergency room, in order to help you pass the time and entertain you in a difficult moment, like the one you are experiencing. We are here for you." In fact, the aim of the service itself is to make the whole emergency room experience as stressful as possible, and to ensure that the patient does not realize the passage of time. The information requested

on this side is the same as the first flyer analyzed.

The tools available to the user are few. In the case taken into consideration, the proposed activity is that of origami. in particular, since the sheet is folded in three parts, it is enough to detach one to start. So the user has the instructions to build the origami, which show the data on the back, separated from the rest of the sheet, which will be used to build the origami itself.

SALUTILE FOR FUN

DURING
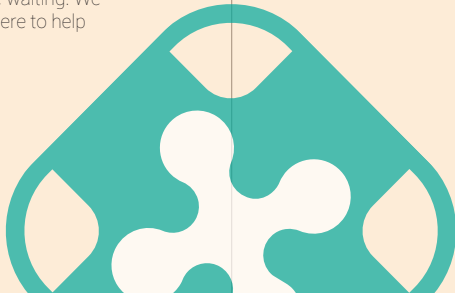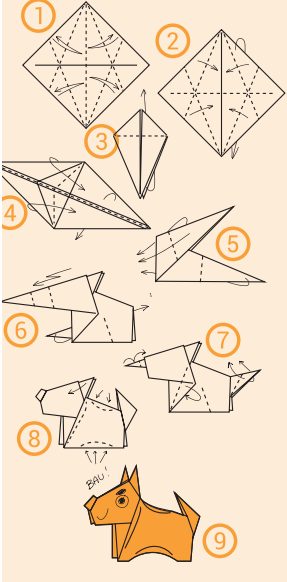
This flyer was designed to be used during waiting time in emergency room, in order to help you pass the time and entertain you in a difficult moment, like the one you are experiencing. We are here for you.
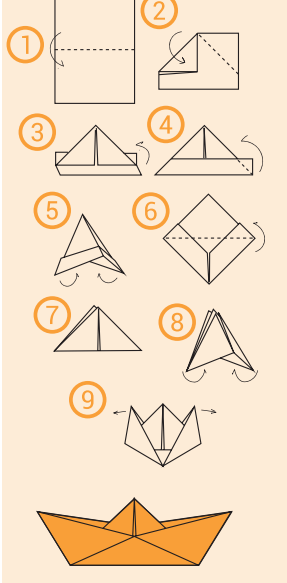
Welcome to one of the emergency rooms supported by Salutile. Use flyers with Salutile logo to better communicate with medical staff, get information about a healthy lifestyle, or distract yourself while waiting. We are here to help you!

FIRST NAME

SURNAME

M   F

DATE OF BIRTH

PHONE NUMBER

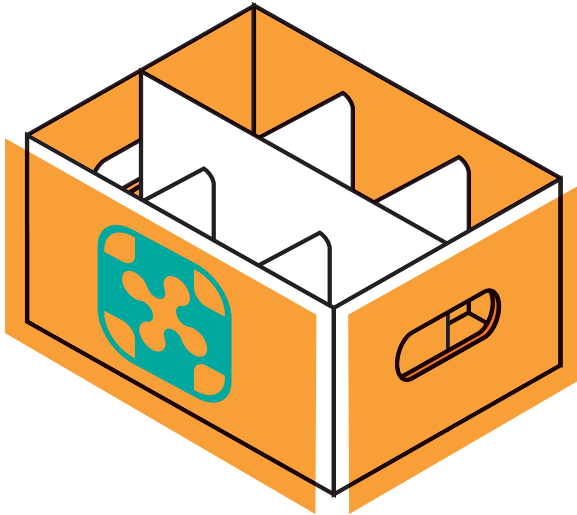VISITING EMERGENCY

ROOM OF

IN THE DAY

HELP US ✂ TO HELP YOU

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

Separate the two parts where indicated, use this to create your origami, and the other to follow the instructions!

HELP US ✂ TO HELP YOU

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

Separate the two parts where indicated, use this to create your origami, and the other to follow the instructions!
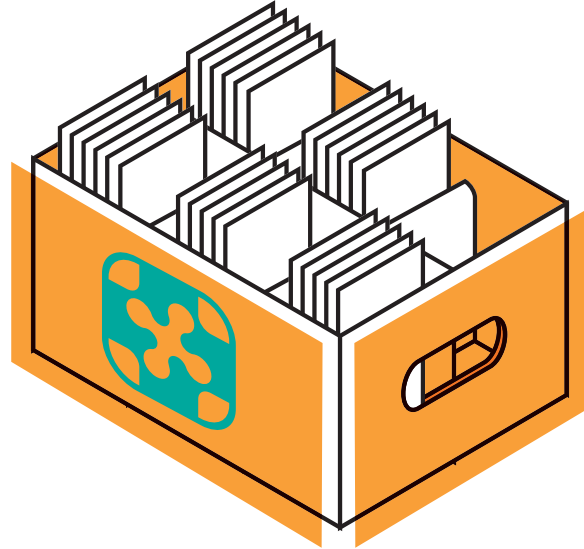
6.5 The container

The flyers described above must be collected at a specific point, in order to be easily recognizable. The tray containing the brochures will have the service logo on the side. Inside the box there are six different compartments, so as to divide the different flyers by topics. The box is delivered to the emergency room unassembled. as can be seen from the technical drawing. The cardboard cut in that way can be assembled without the use of gluing points. In this way, production costs are reduced, and transportation is easier. The tray is made up of four parts. The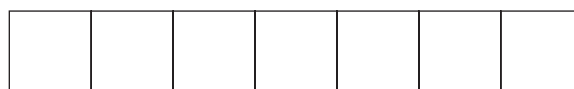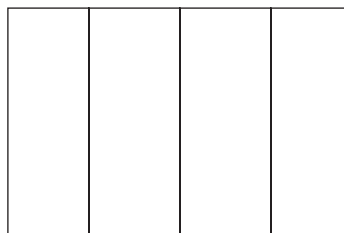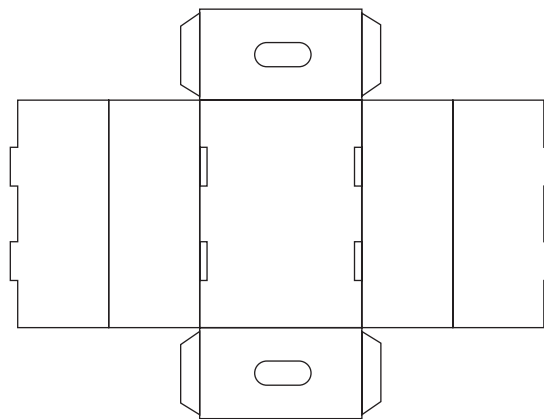 main body, with two holes for easy transport. The widest divider, which will be placed in the center of the tray. Two other smaller dividers that create the internal compartments.

The nurse on duty at the triage should have a dosing container in order to pass a leaflet, if necessary, if a patient seems particularly agitated or stressed.
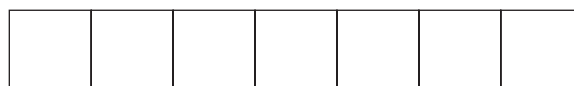
Doing so can help to extract the patient and calm him down at the same time, so that he avoids annoying the medical staff.

Being a corrugated cardboard structure, the set of tray and flyers is rather light. For this reason, if the first aid structure does not allow other solutions, it could be attached to the wall with simple double-sided tape.

6.6 New Place

The project ends by imagining the new aspect of first aid. The waiting room offers several sessions where patients and carers can spend time. In the graphic representations the elements of the service can be recognized by the yellow color. The turquoise color is used to emphasize changes in the environment that would lead to a change in the way of living the space. Thanks to the new seating arrangement, it will be possible for users to stand in front of those who accompany them, thus promoting conversation and human relationships. at the ends of each row of chairs there will be a table on which the Salutile flyers container will be placed. Among the elements considered to furnish the environment there are also some informational posters on the walls of the hospital.

A corner has been designed with a table larger than the others. This creates an almost private space inside the waiting room. It can be used by a parent who has had to bring their child to the emergency room. Or by a companion who needs to use the computer during the waiting period. The project provides a similar space to be exploited according to the needs of the patients. An arrow at the entrance indicates to the user the direction for acceptance to the triage. The path from the entrance to the waiting room to the triage desk must be clear. The chairs closest to the entrance are turned from behind to those who
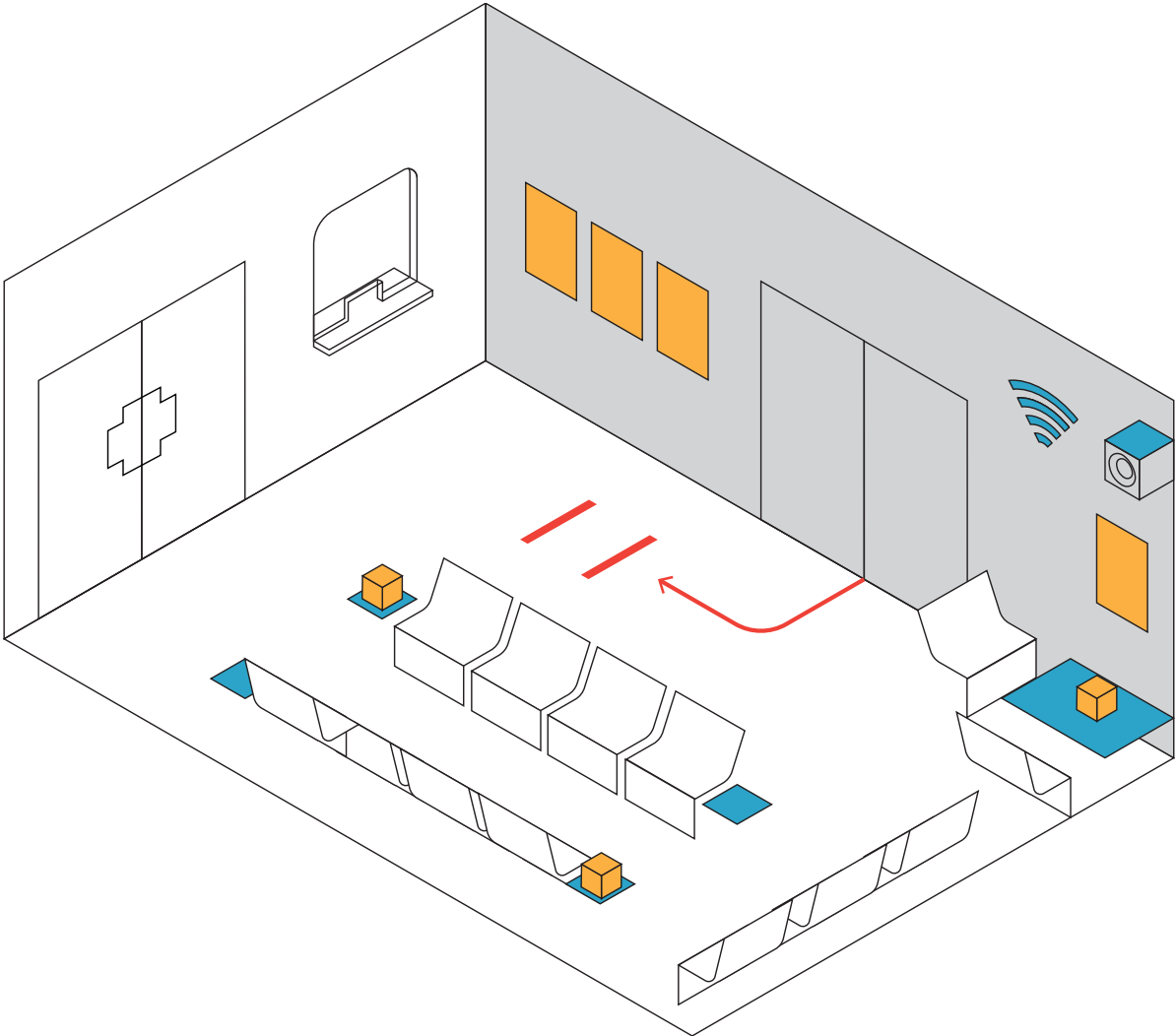
enter, so that the newly arrived patient does not feel the pressure of unknown looks. Two lines positioned on the ground indicate the distance to be kept both from the busy door and from the first in the row. Patients should not crowd, but be respectful of the established distance. To the left of the reception desk is the visiting room. The patient must go there when he is called by the triage nurses. The space in front of the room must always be left free. The glass that separates the patient from the nurse in the waiting room must be clear of any obstacles. The relationship between patient and medical staff must begin with the utmost transparency and trust. Inside the waiting room you can see how loudspeakers are present, to spread music at low volumes, but which nevertheless avoids heavy silence inside the room. It is also remembered through pictograms that in the space you can access the free wifi service.

From another point of view, it can be seen how the entry of patients who are taken by ambulance, or who arrive on foot from the parking lot, is managed. Priority is given to the entry of the ambulance stretchers, they
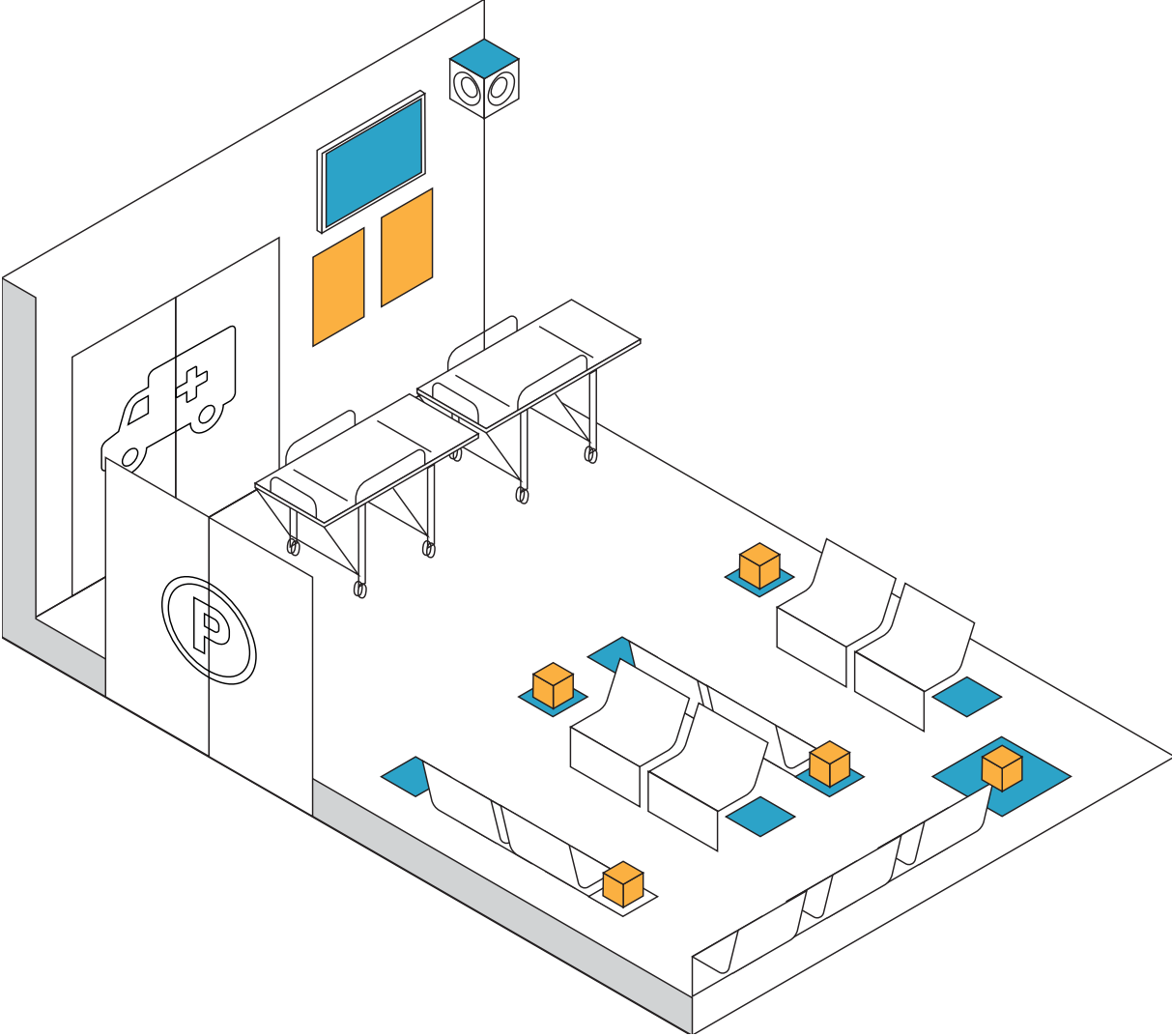
take up a lot of space and the path to the examination room must be clear. The seats leave the space necessary to move several stretchers. In fact, it may happen that more stretchers must be left in the waiting room, while the room they need is freed. The space necessary for the entry of people who went to the emergency room by car is also left. The entrances are separate and not in contrast with each other.

A screen has been positioned in the same area which transmits the visits to which the different patients undergo in real time.

As explained above, the name or surname of the person will not be visible, only the reference number. The results of the tests he will undergo will not be displayed, only what type of doctors are visiting him. So those who accompany him will be able to get news and feel reassured in the meantime.

The third area, located in the part most distant from acceptance, could be considered a relaxation area. The back wall houses two vending machines. You can buy healthy products that you can eat inside the waiting room. Both drinks and foods, so that users
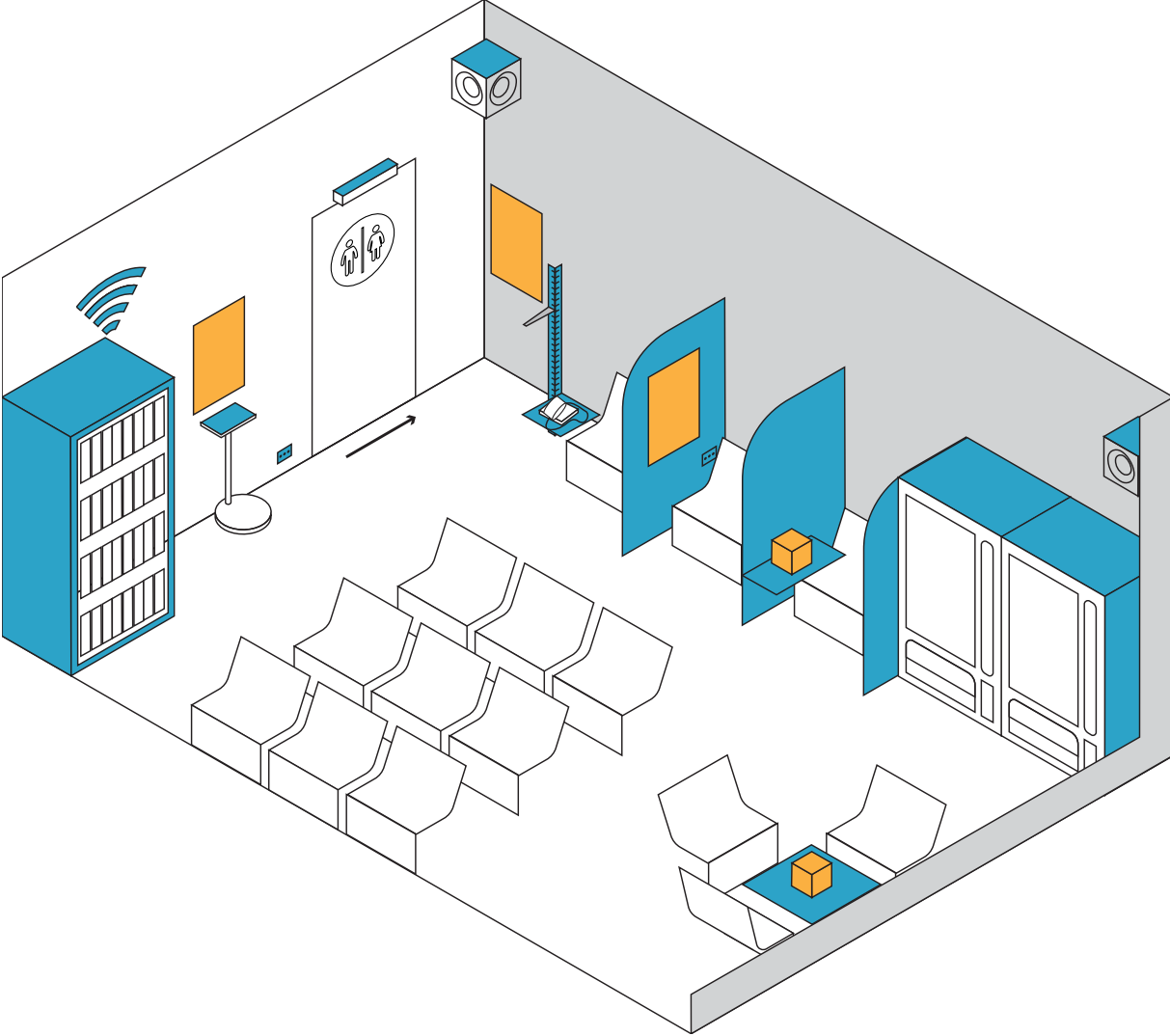
can eat during long waits.

There are two positions more isolated than the others. They can be used by single patients, who feel the need for more privacy. They could also be used by carers, who organized themselves in advance and brought the computer to do some work.

Three chairs around a table form another private space. The proposed support can be used using the Salutile service, which will already be on the table, or in the way the patient prefers.

The bookcrossing library is located on the left side. As already explained, patients are free to take a book to spend the waiting time, or decide not to leave it in the hospital and take it home. But to do this they have to leave another book. It is similar to the bartering system.

Located on the right of the library is a scale, made available to patients. having tools that offer information about one's health helps to distract users without forcing them to think totally about anything else. Information such as weight and height are easily obtained with user-friendly machines. The patient gets distracted but at the same time gets information about himself.

In fact, it can be seen that a meter was placed near the wall to measure the height of the interested users. Next to the meter to measure the height of the user, there was half a station to measure the blood pressure. It is composed of a seat, a table, and the blood pressure machine. The session is necessary because if the parient wants to have a fair balance
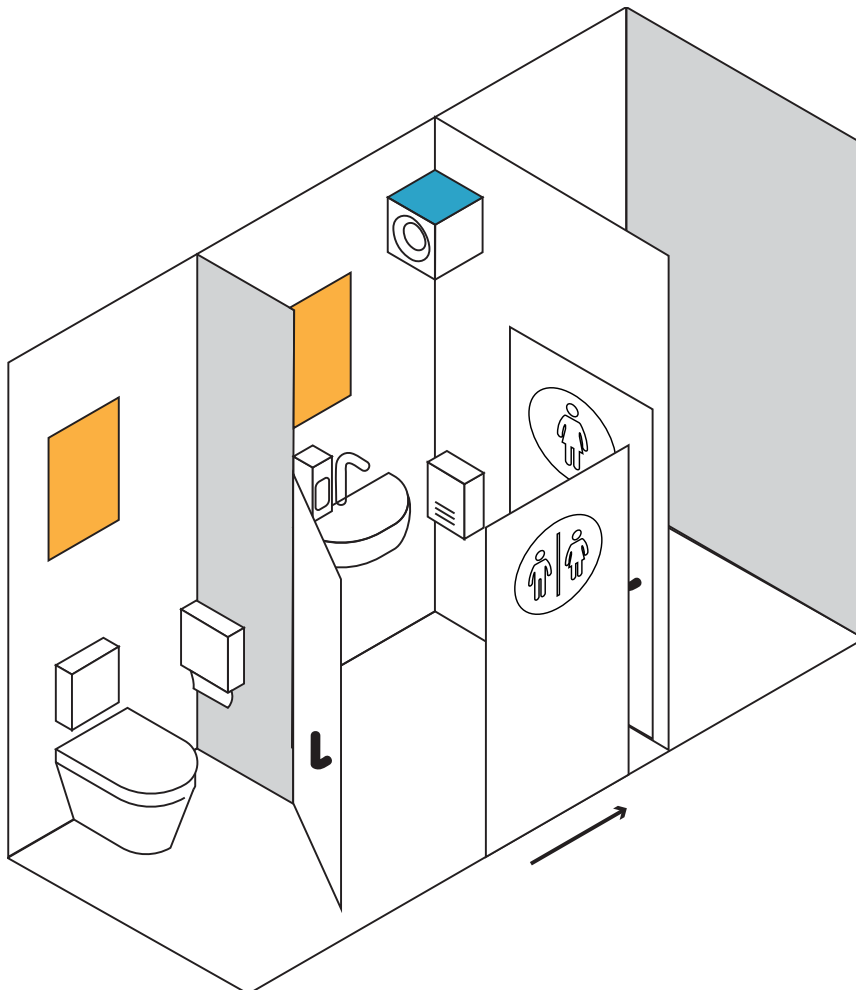
he must be seated during the measurement. Altering the measurement can lead to an increase in anxiety and stress that should not be at such a time.

From this part of the waiting room you can access the toilet. As mentioned, the access door to the dressing room is sliding.

In the dressing room there are two entrances to the bathrooms, for men and women, a sink with photocell, a soap dispenser and a hand dryer, both automated without the need for physical contact. Even in the bathroom there are speakers to continue making music heard. In this way there is continuity between the different environments and you are not distracted. Self-cleaning toilets and a sheet toilet paper dispenser are placed inside each toilet. This type is preferred instead of toilet roll paper to avoid waste. Since the mirrors have been avoided, information posters are placed in their place.

7 Conclusion

To conclude, the service that has been designed has as its objective the idea of making an experience based on the existence of a problem as pleasant as possible. Some moments in the relationship between the patient and the emergency room must be painful. But this does not apply to everyone. The patient must be free to focus on the problem, health. Not long waits, or an inconvenience in the waiting room space. The problem that had been identified by the patients themselves, the long waits, hides behind other problems. The waiting time is not the cause. It is the consequence. The motivation for long waits is what patients need to justify their anger. An anger caused by the impotence they feel at that moment. For this reason, the goal has not been to decrease expectations in the emergency room. The opportunity that presented itself was to distract the patient as much as possible, so that he would not notice the passage of time.

The Salutile service offers the possibility for different types of patients to find a source of distraction where they want it. It is a service that offers slight distractions, but inherent to the environment in which it is located, up to trying to completely alienate the user.

The new arrangement of the waiting room in the emergency room offers various experiences depending on what the patient wants to do. Those who want to isolate can do it, those who prefer to sit at the table with their companions will find the right environment.

A change in the way of living the emergency room leads to a change in the way users approach medical personnel. By offering them the opportunity to get distracted, physical confrontations between the two factions will no longer be necessary. The focus of the medical staff must remain on the health of the patients. They cannot be distracted to think about their own safety or that of patients in ER.

The atmosphere in the waiting room can change thanks to the Salutile service. It is right that the experience changes positively.

In the future the service will be tested in the Bassini hospital to understand the reaction of the public, and to be able to improve thanks to the feedback given. When the hospital's medical staff heard about the proposal to test the service, they were happy to take part.

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