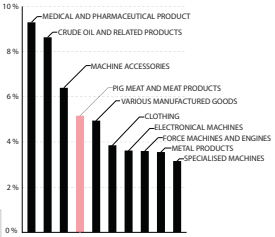
DENMARK

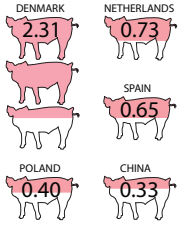
Denmark is among the world's largest pig meat exporters. For more than 100 years, the production of pigs and pig meat has been a major source of income for Denmark. Approx. 90 percent of the production is exported and is thereby essential to the Danish economy and the balance of trade and Denmark is among the world's largest pig meat exporters. Exports of pig meat account for almost half of all agricultural exports and for more than 6 percent of Denmark's total exports. A substantial number of live piglets are exported, mainly to Germany. More than 70 percent of Danish pig meat production is exported to other EU countries, and the remaining part is exported to countries outside the EU.

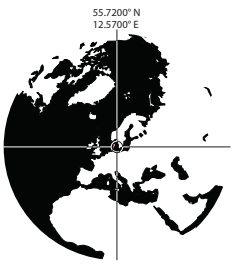
Since the pig industry is such an influential part of Denmark pork is an extremely popular food in Denmark and is a fundamental part of the Danish cousin. An average dane eats 96 kg of meat every day (nr. 13 in the world) and 43 % of the daily meat is pork, making pork the most popular type of meat in Denmark.

EKSPORT OF DANISH PRODUCTS

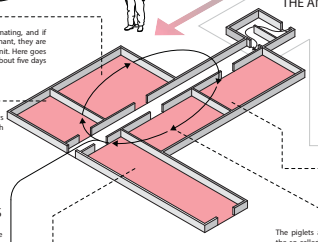


PIGS PER CAPITA TOPLIST

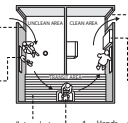




THE DANISH PIGGERY



THE ANTEROOM



1. The only entrance to the stable area. The door must be equipped with a lock and a doorbell, and should be kept locked.
2. Outdoor clothing and footwear must be removed in the unclean area.
3. Wooden pallet, only to be stepped on with socks.
4. Hands should be washed and disinfected.
5. Closet with clothes and boots for the stable both for stable staff, the veterinarian and other visitors.
6. The doors to the stabel should be kept closed.

FROM PIGGERY TO CONSUMERS

At the age of six months the pig is either send to the slaughter house, or (if valued to be a fertile sow) send to the mating section.

TRANSPORT FROM PIGGERY

SLAUGHTER HOUSE OR PROCESSING INDUSTRY

TRANSPORT FROM SLAUGHTER HOUSE OR PROCESSING INDUSTRY

EXPORTET WORLDWIDE

DANISH RETAILERS

GROUP MEDICATION

In the Weaning Unit the piglets are weaned from sucking milk. Most of the piglets stomachs are not yet mature enough to handle the feed, and to prevent them from getting diarrhea, the piglets are treated with antibiotics. In most cases more than 25 procent of the herd needs treatment and the whole herd are then group medicated with antibiotics.

WEANING UNIT

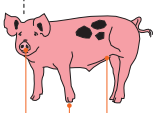
The piglets are typically moved to the so-called double climate stable where there is provided a cover as a part of the unit. The cover acts as a cave where the piglets is sheltered and can warm each other. The pigs stay in the weaner unit until they weigh 25-30 kg, after which they are moved to the finishing unit or sold on to other pig farmers.

FARROWING UNIT

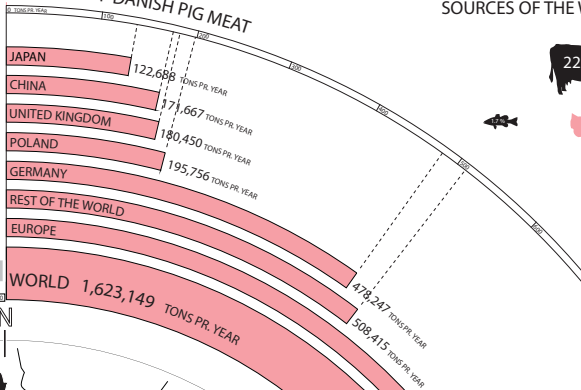
In the farrowing unit the sow gives birth. The sows are moved to the farrowing unit about five days before farrowing and remain there until the piglets are weaned. Weaning may vary, but in Danish herds it is usually four weeks after birth. At the time of weaning the sows are moved back to the mating section, while piglets are moved to the weaning unit.

FINISHER UNIT

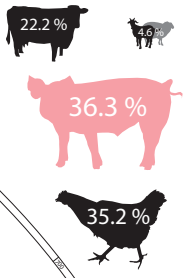
In the finishing unit the pigs typically goes together in pens with approximately 15 pigs in each, depending on the size of the pigsty. The pigs stays in the finishing unit from the weighin of 25-30 kg and until they weigh about 105 kg, where they are delivered to the slaughterhouse. At that time they are 5-6 months old.

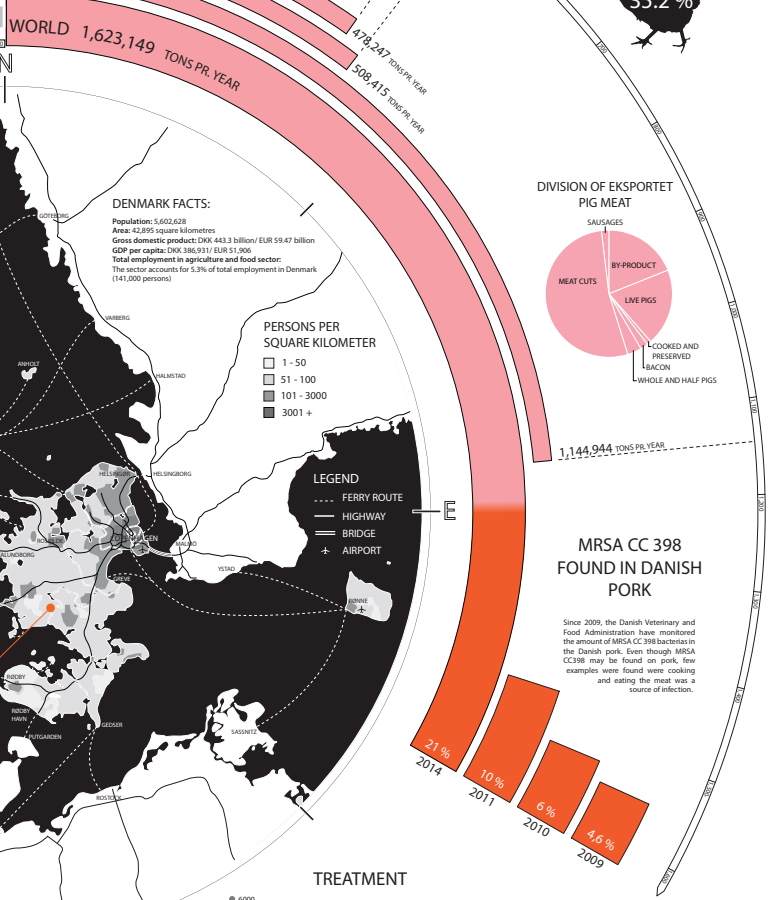


EKSPORT OF DANISH PIG MEAT



SOURCES OF THE WORLD'S MEAT SUPPLY





DENMARK FACTS:

Population: 5,602,628
Area: 42,895 square kilometres
Gross domestic product: DKK 443.3 billion/ EUR 59.47 billion
GDP per capita: DKK 386,931/ EUR 51,906
Total employment in agriculture and food sector:
The sector accounts for 5.3% of total employment in Denmark (141,000 persons)

PERSONS PER SQUARE KILOMETER

- 1 - 50
- 51 - 100
- 101 - 3000
- 3001 +

LEGEND

- FERRY ROUTE
- HIGHWAY
- BRIDGE
- AIRPORT

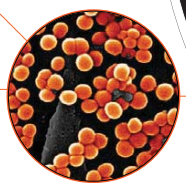
DIVISION OF EKSPORTET PIG MEAT

MRSA CC 398

Methicillin-resistant Staphylococcus aureus (MRSA) is a bacterium responsible for several difficult-to-treat infections in humans, and is often reffered to as a "super-bug". Like other new types of MRSA, CC398 has the potential to spread further into the community, and the strain may change and increase its capacity for person-to-person transmission. The bacterium is hosted in pigs but is easely transmitted to humans.

At random tests in 2010, it appeared that 16% of Danish pig herds were infected with the CC398, which corresponds to approximately 2,000,000 pigs nationwide. In January 2014, infection rates have increased to 88% according to a survey from national slaughterhouses.

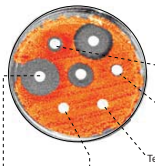
The bacteria can be expected to exist in every part of the environment inside the stabel, but is most likely to be found in the nose and on the skin of the pigs and in the dust on the floor in the stable.



ANTIBIOTIC RESISTENCE

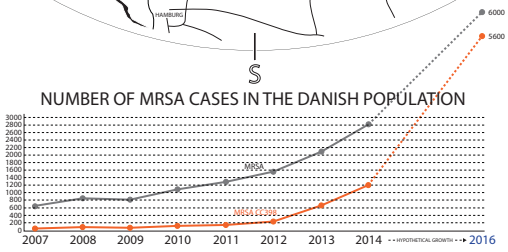
MRSA CC398 seems to originate from a harmless MSSA (methicillin-sensitive Staphylococcus aureus), an antibiotic-sensitive bacteria in humans, but in that it has changed its host from humans to pigs, it has been subjected to a selection pressure by the large consumption of antibiotics in pig herds, due to group medication. In pigs, it has become resistant to antibiotics first Tetracycline and then methicillin and other products including zinc.

MRSA CC398



MSSA

NUMBER OF MRSA CASES IN THE DANISH POPULATION



MRSA CC 398 FOUND IN DANISH PORK

Since 2009, the Danish Veterinary and Food Administration have monitored the amount of MRSA CC 398 bacterias in the Danish pork. Even though MRSA CC398 may be found on pork, few examples were found were cooking and eating the meat was a source of infection.

TREATMENT

MRSA CC398 is treated in the same way as with other types of MRSA. However, due to the higher level of antibiotic resistence, it is very difficult to find the appropriate antibiotic to treat CC398.

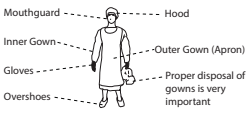
When infected with MRSA CC398 you have to apply mupirocin nasal ointment in both nostrils several times daily.

Also, daily full-body wash including hair washing with chlorhexidine hydrochloride soap 4% is necessary. Since soaps contains anionic substances that reduce the efficacy of chlorhexidine no other cleanse are used during the treatment period. It is advisable to use moisturizer after bathing to prevent drying of the skin. The patient has to be dried with a clean towel with every wash.

By throat carrier state, it is usually necessary to supplement with systemic antibiotic therapy, and any systemic treatment undertaken in consultation with a clinical microbiology department

MRSA TREATMENT KIT:

High hygiene is an essential part of keeping MRSA CC398 under control. This include frequent hand washing and surface sanitizing. Medical staff who are in contact with the infected should wear proper treatment kit to avoid contamination.



SOURCE OF INFECTION

The stable is an isolated zone where you only are able to enter through the anteroom. The farmers use the anteroom as a safety zone to change from civil to the disinfected stable uniform. Despite the safety routines on the piggery, MRSA CC398 is mainly transferred to persons who have direct contact to live pigs or to the swine holdings and to their household members.

DISEASE CARRIER

MRSA CC398 is a bacterial clone that is expanding among persons with contact to swine and in areas characterised by intensive farming, and most outbreaks are in the rural areas of Denmark. Throughout the years, a share of the cases with no exposure to swine have been reported. As these cases have typically been observed in areas with intensive farming, it is likely that the cases may be ascribed to indirect infection from swine farming.

THE SECRET ENEMY

MRSA it is often found in the hair or in the nose or other open areas on the human body. As is the case for other types of MRSA, a considerable share of the CC398 cases are healthy carriers. The notified cases do not only include MRSA-positive, healthy household contacts, but also a limited number of healthy persons screened in the context of various studies.

TRANSMISSION PATHS

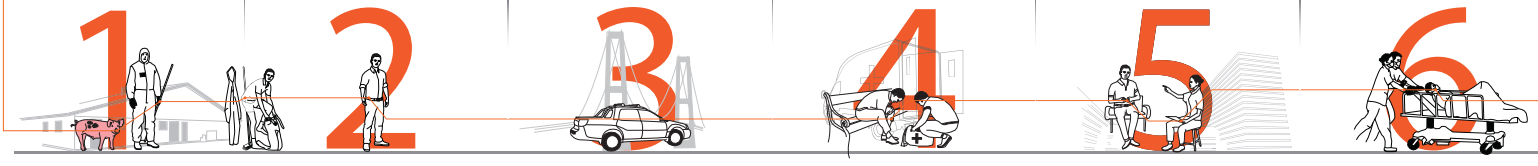
MRSA CC398 is contagiuos through contact. MRSA can be transmitted from surfaces e.g. doorhandles, clothes, towels, cell phones, keyboards of which a infected person has been in contact with, but the most effective pathway is direct close contact. The chance of getting infected is highest when repeated such as close social contact - like when you live or work with someone who is carrying MRSA .

SYMPTOMS

Most of the MRSA infections are discovered as warm red skin, swelling, joint pain, boils and blisters, fever, nausea and abscesses. Persons with serious diseases or weakened immune systems are at increased risk of serious ilness including sepsis. Carrier state is diagnosed by swab from the nose and throat.

HOSPITALIZATION

When MRSA CC398 is discovered the patient immediately gets transferred to a safe treatment unit designed to handle MRSA. MRSA is especially troublesome in hospitals where patients with open wounds, invasive devices, and weakened immune systems are at greater risk of nosocomial infection than the general public.



Piggery

In this case we follow the farmer as he leaves the stable throught the anterroom.

Civillian

Despite the safety routines a piece of hes outdoor clothes is contaminated with MRSA CC398.

Transportation

With the bacterium on him he leaves the rural area of Denmark to visit Copenhagen.

Injury

In Copenhagen he is injured and gets transferred to The Main Hospital where the farmer is screened with 4 questions.

Diagnostication

A test result reveals that his wound is infected with the bacteria. MRSA CC398 gets tranferred to the doctor due to physical contact.

Relocation

The farmer is immediately transferred to a safe treatment unit designed to handle MRSA.

COPENHAGEN

The Danish capital Copenhagen is well known for being an attractive goal for tourists because of the Danish mentality, culture and its kingdoms history. It inhabits almost 2 million citizens and have more than 5 million visiting tourists a year. Copenhagen is, like many other European Cities, placed near a river connected to the sea. The harbour has been an important factor in the development of the city. Once the harbour of Copenhagen was the Danish main central for trade and military ships. Today many old harbours in bigger European cities like Copenhagen, Hamburg and Amsterdam are getting transformed into attractive living areas for citizens and tourists, which in recent years have created an intens development, cultivation and growth at the harbour. It has therefore become very popular to take canal-tours around the harbour infrastructures, to get a view of the historical development of the city.

HAMBURG, GERMANY

AMSTERDAM , NETHERLANDS

LONDON, ENGLAND

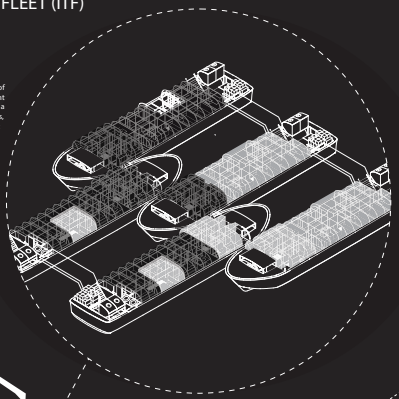
MRSA CC398 ISOLATION AND TREATMENT FLEET (ITF)

GPS coordinates: 55° 41' 38.2236" N 12° 36' 14.8284" E
Current number of vessels: 5
Capacity of patients: 12
Capacity medical staff: 7
Capacity of laboratory technician: 6

Our idea is the transform the Netto Boats into a floating Isolation and Treatments Fleet (ITF) for the deseased. Very few cases of MRSA succesfully being transmitted trough water has been found, and by placing the ITF 50 meters out in the habour we create a natural barrier for the bacteria, and protects the population from risks of contamination. The ITF will be anchored close to The Little Mermaid port station were it would not interfere with the daily water traffic of the habour. The goal is to change as little as possible in the existing everyday life of Copenhagen, leaving the streets and parks uninterrupted, while still staying in the city center.

The Netto Boats are connected with a set of construtions that ties and bridges the different boats together. Each boat is transformed into a vessel that can facilitate a specific programs, and together, they create a single unit that provides the care needed for treating patients infected with MRSA CC398 bacteria. The ITF is meant to grow and connect with more vessels, expanding its program or even adding new functions to the fleet.

However, the ITF is highly dependent on the ITF Transport Vessel.

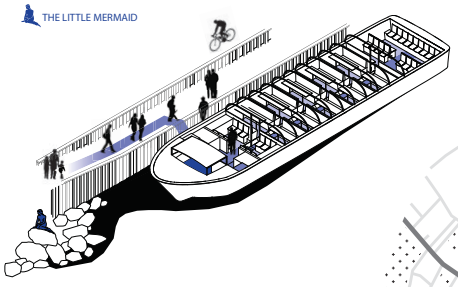


THE NETTO BOAT

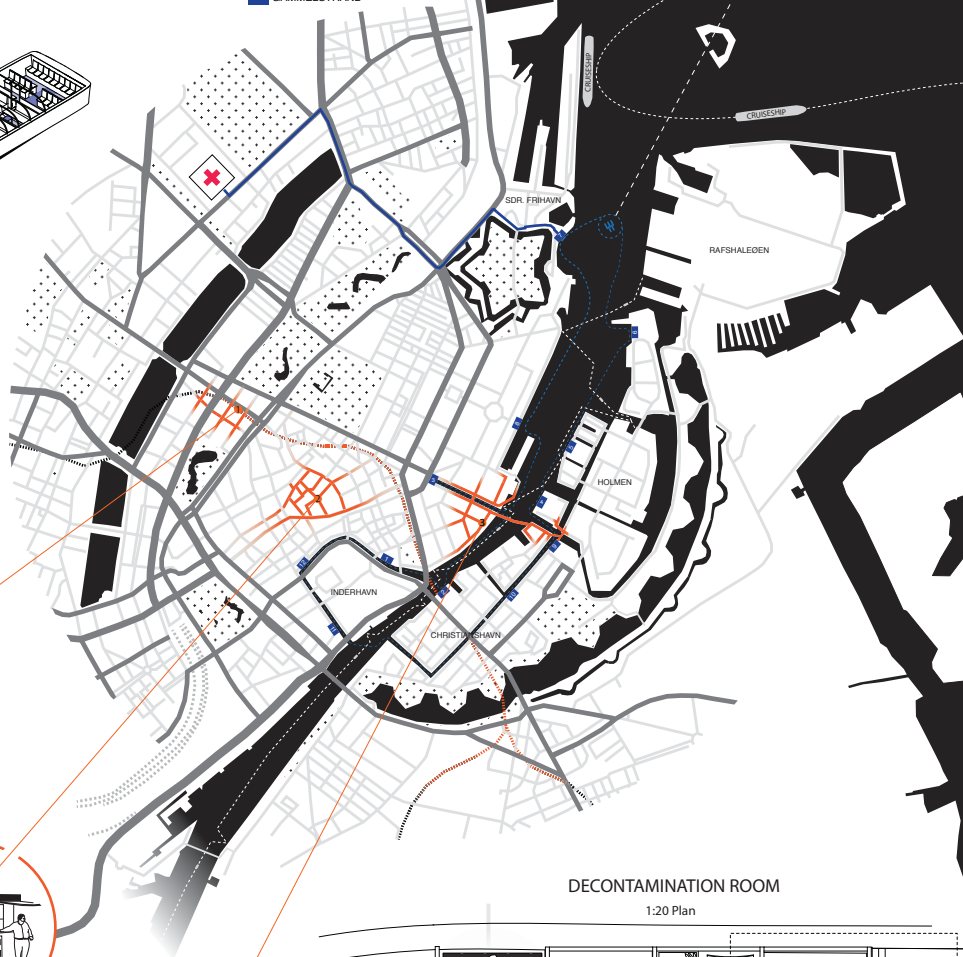
In Copenhagen the canal tour boat is called the Netto Boat and is build on the harbour site. The boat is sailed by an experinced captain and a guide telling the history of Copenhagen to the people aboard. There are over 30 Netto Boats operating in the habour. It is a very cheap boat and it is fast to build and dosent take more the 2 men a couples of weeks to construct. Every winter the boats is getting pulled out of the water for maintenance.
The flat and long dimensions of the Netto Boat makes it possible to sail under the 12 low bridges that connects the different habour regions in the city while still having space for more than 145 guests.
It is powered by a 1.6 diesel, 1 stroke engine.

STATION NUMBER 7, THE LITTLE MERMAID

- CAPTAINS CAP
- PASSENGERS ENTRANCE AND EXIT ROUTE
- SEATS AND CABINS
- THE LITTLE MERMAID



1 HOLMENS KIRKE
2 UDENRIGSMINISTERIET
3 NYHAVN
4 HOLMEN
5 OPERAEN
6 GL. MASTEKRAN
7 THE LITTLE MERMAID
8 AMALIENBORG
9 CHRISTIANSHAVNS KANAL
10 FREDERIKSHOLMS KANAL
11 NATIONALMUSEET
12 GAMMELSTRAND



COPENHAGEN FACTS:

Population: 1,992,114
Area: 2,778 square kilometres
Highest elevation: 91 m
Lowest elevation: 1 m
Number of bridges: 12

LEGEND

- ISOLATION AND TREATMENT FLEET
- HARBORBUS
- THE MAIN HOSPITAL
- PARK
- TRAIN
- METRO
- ROADS
- MAIN ROADS

THE WORST-CASE SCENARIO OF 2016

The worst-case scenario of 2016 is the context of our design proposal.

In this scenario, the cases of MRSA CC398 infections have continuet the growth that startet in 2008 and has accelerated into more than 5,600 infected persons nationwide. More than 90 % of the recorded MRSA cases are now of CC398.
A streak of outbreaks has let the MRSA CC398 to leave the environment in the stable in the rural areas of Denmark and to spread from person to person in the most densely populated area of scandinavia: The city center of Copenhagen. In this state of emergency, the situation is especially dangerous at The Main Hospital where the bacteria easely enters through open wounds in patients and the standard hospital treatment unit for MRSA is filled. The situation is equally critical in the habour regions where the development from industry to leisure has increased the density, made the environment hard to access for cars, and where the narrow canals and low bridges make access for the majority of boats impossible.
Therefore, a flexible, effective and affordable measure is needed to provide swift response to the MRSA CC398 outbreak.

1.
The doctor touches the handle bar in the crowded metro during rush-hour.

2.
The docter eats at a crowded street kitchen better known as a sausage-cart, where people are eating close to each other.

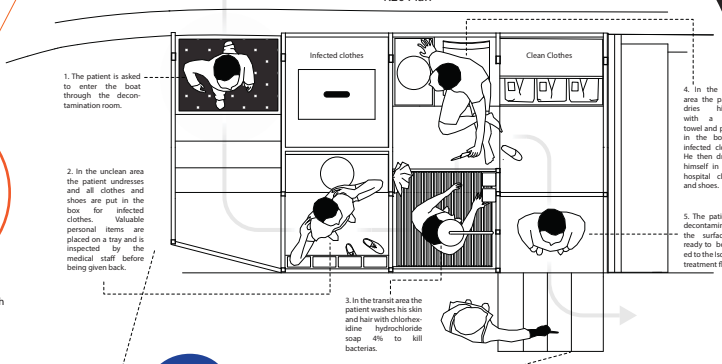
Outbreak In General Public

The doctor is now a carrier of MRSA CC398 and is among the general public in Copenhagen.

3.
The doctor has physical contact with friends in the centre of the city.

DECONTAMINATION ROOM

1:20 Plan



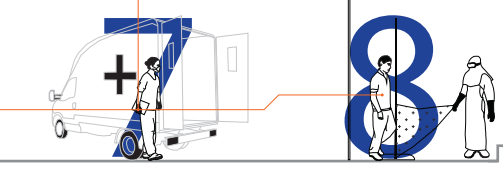
1. The patient is asked to enter the boat through the decontamination room.

2. In the unclean area the patient undresses and all clothes and shoes are put in the box for infected clothes. Valuable personal items are placed on a tray and is inspected by the medical staff before being given back.

3. In the transit area the patient washes his skin and hair with chlorhexidine hydrochloride soap 4% to kill bacterias.

4. In the clean area the patient dries himself with a clean towel and puts it in the box for infected clothes. He then dresses himself in clean hospital clothes and shoes.

5. The patient is now decontaminated on the surface and is ready to be transported to the isolartion and treatment fleet.

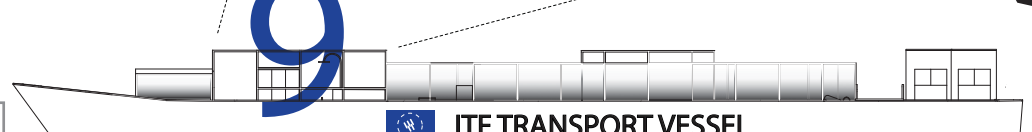


Port Station

Patients infected with MRSA will be transferred from The Main Hospital to the nearest port station.

Isolation

At the port station the farmer is picked up by the Transport Vessel to be transferred to The MRSA CC398 Isolation and Treatment Fleet.



ITF TRANSPORT VESSEL

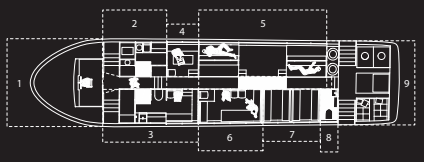
1:50 STARBOARD ELEVATION

ITF TRANSPORT VESSEL

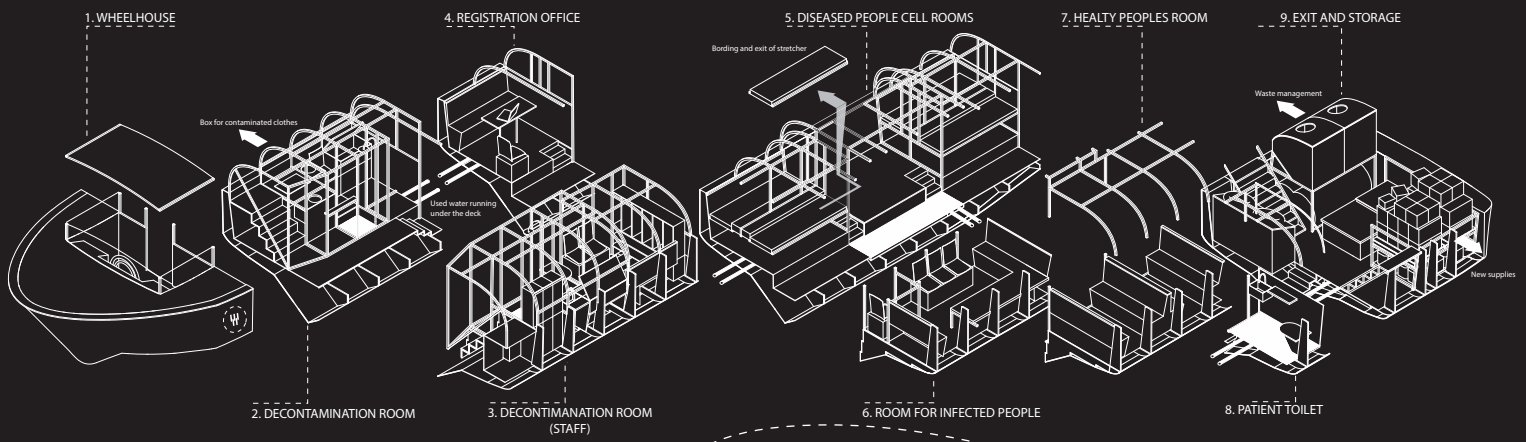
The ITF Transport Vessel is the only physical bridge between the ITF and the rest of society. This makes the vessel an extremely important part of the ITF's ability to stay operational, providing it with the necessary supplies. But it is also a potential threat to the isolation of the infected, since MRSA CC398 transmits through physical contact, making the vessel a gateway to and from the ITF.

The Transport Vessel and the vessels in the ITF is designed after the same principle: a transformation of the Netto Boat. Modifications has been added over and below deck and extendsions of the existing construction has been applied where needed. To lower production costs the vessel still uses natural ventilation and the original engine and hull is unchanged.

The original wheelhouse is used to operate the IFT Transport Vessel (1), and besides the captain, a nurse and a doctor are a part of the managing ship crew. To keep the inside surfaces clean the entrance is through the two decontamination rooms in the stern. Patients who are able to walk with or without assistance enters at starboard (the right side) (2). On the port (the left side) is the entrence for non-patients (3). This decontamination room is an expanden version with lockers and a toilet only for staff. When the patients have been cleaned they are asked to register their Social Security Number at the doctor in the registration office (4). This also serves as a consultation room during transport. A large section of the starboard is used for recieving and handling stretchers for patients who are to sick to sit during transport (5). On the opposite side is the sitting area for infected people, where the nurse has a chair in a semi-closed cell and are able to monitor the patients (6). Next is the sitting room for healthy people, such as ITF staff and releatives to the patients (7). The last sheltered section on the Transport Vessel is the toilet for patients. At the aft (rear end) the two exit-stairs are located (9). The one on starboard is for patients and the one on port is for staff and guests. Behind the stairs are the engine compartment in the middle with sewege and waste containers on the starboard and supplies and freshwater containers on the port.

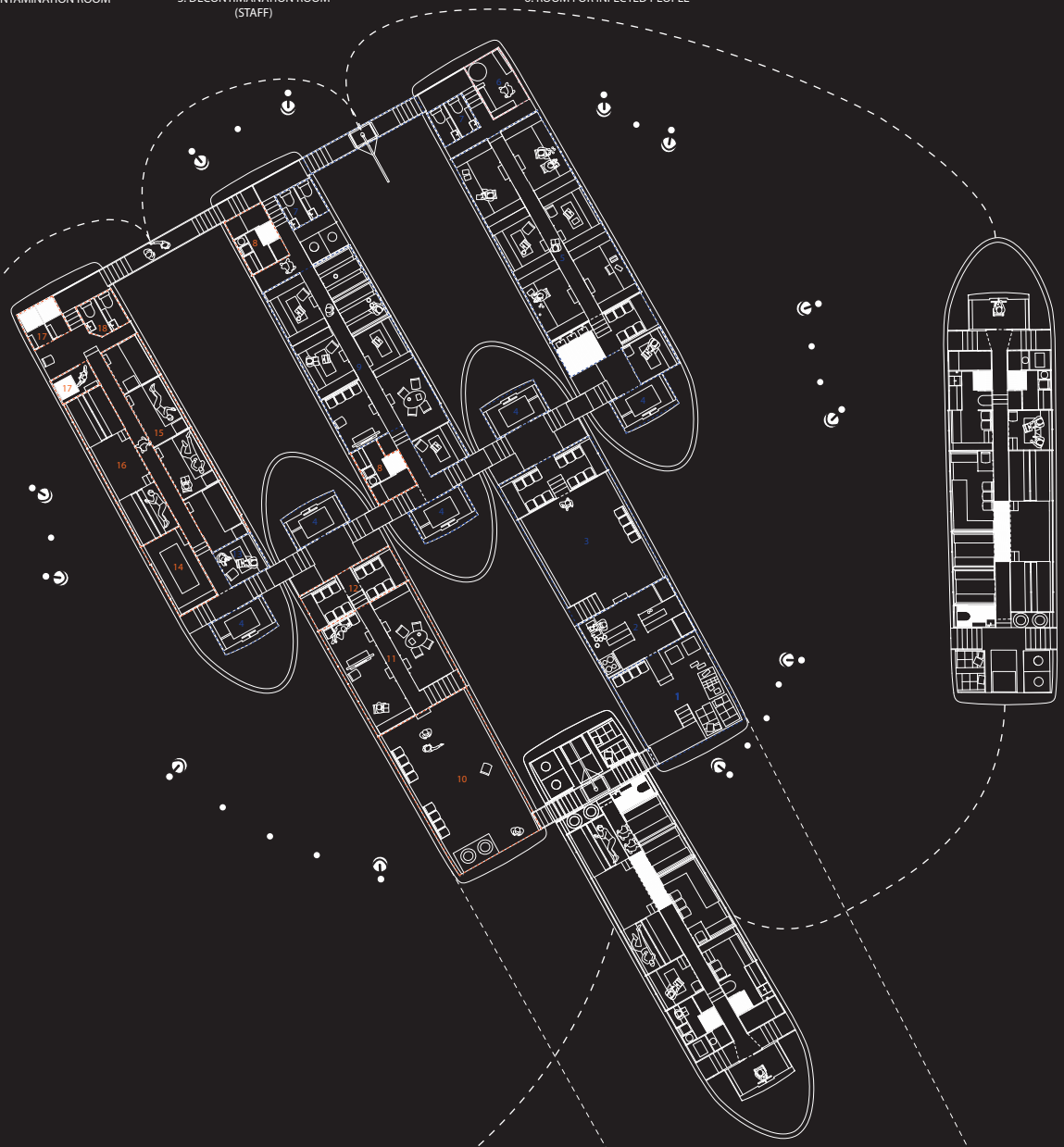


1:50 EXPLODED ISOMETRIC



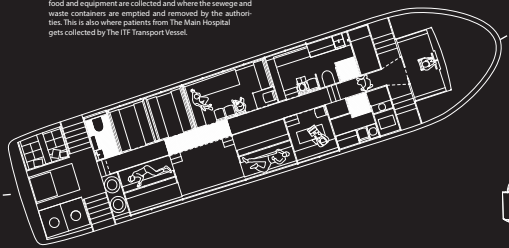
1:100 ITF PROGRAM

1 STORAGE
2 KITCHEN
3 OPEN DECK
4 GENERATOR
5 CLINICAL MICROBIOLOGY DEPARTMENT
6 LABORATORY STORAGE
7 STAFF TOILET
8 DECONTAMINATION ROOM
9 STAFF ROOM, OFFICE AND CANTEEN
10 PATIENTS OPEN DECK
11 PATIENTS FACILITIES
12 VISITING ROOM
13 OFFICE
14 OPERATION ROOM
15 PATIENT CELL
16 PATIENT ISOLATION CELL
17 PATIENTS BATH
18 PATIENTS TOILET

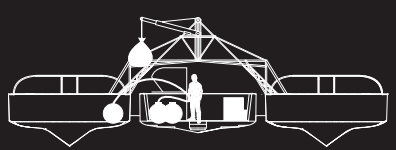


ITF LIFELINE

The Transport Vessel is the ITF's lifeline and working ant. The Netto Boat´s 12 original port stations, that are located all around the habour of Copenhagen, has been fenced and are now used for collecting people infected with MRSA CC398. The port station at The Little Mermaid has been choosen as the main port station. This is where fresh supplies of water, food and equipment are collected and where the sewege and waste containers are emptied and removed by the authorities. This is also where patients from The Main Hospital gets collected by The ITF Transport Vessel.

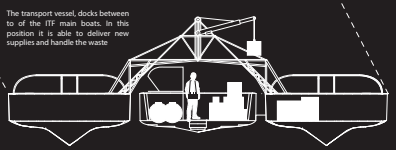


1:100 PLAN, ITF TRANSPORT VESSEL



1:100 SECTION, WASTE MANAGEMENT

The transport vessel, docks between to of the ITF main boats. In this position it is able to deliver new supplies and handle the waste



1:100 SECTION, SUPLY MANAGEMENT