must be cleaned and autoclaved for the next operation. Furthermore, there exists special transports, such as for example transport of biological samples and transport of medicine from the hospital's pharmacy and out to the patients. In today's hospitals there exists different solutions to these tasks, such as for example air tube systems for medicine and biological samples. There is also known automatic trolley units for transport of beds or linen, which are typically designed to be in areas without patient influx. Finally, much transport is based on ordinary manual freight with simple trolleys and pallet jacks or similar vehicles, which are pushed by hand around the hospital. There is here a significant risk of clean, and in principle sterile material, headed towards a ward, being stored en route in the same room, side by side with used material, which poses a risk of infection and is headed away from a ward. The different trolleys or storage units can cross each other's way and there can occur mixture also across individual wards.

Embodiments of the present invention seek to provide a transport system where the risk of infection from used materials or materials, which are transported away from a care and treatment area, may be minimized to the highest extent.

According to an aspect of the present invention, there is provided a transport and storage system for servicing of a number of treatment and care areas in a hospital, where, to each treatment and care area a transport route is connected, which is reserved for transport of clean goods to or from a treatment and care area and a transport route is connected, which is reserved for transport of non-clean goods to or from the treatment and care area, where the two transport routes are separated and where a partition is provided between the transport routes and the treatment and care areas characterized in that the partition includes a lock gate and that the transport routes include a conveyor to containers with lids, which conveyor is connected to the lock gate, where the container has a brim and the lock gate has an internal opening brim, enclosing the container brim, that the container comprises a lid designed for enclosing mesh with the container brim and that the lock gate includes a gripper for separation of container and lid such that the container's inner is made accessible from the treatment and care areas when a specific container is led to a specific lock gate.

Embodiments of the present invention provide a transport route being connected to each treatment and care area, which is reserved for delivery of clean goods for the treatment and care area and a transport route, which is reserved for removal of non-clean goods from the treatment and care area, where the two transport routes are separated, since a partition is provided between the transport routes and the treatment and care areas and where there in the partition is a lock gate and the transport routes include a conveyor to containers, which conveyor is connected to the lock gate since the container has a container brim and the lock gate has a, to the container brim, enclosing lock opening. Hereby, an actual separation is made possible, not just of the transport routes from the treatment and care areas, but also between the transported material and the transport routes as such, since all material is subsequently

transported in the containers and the container's exterior is never in actual contact with the treatment and care areas, since it is only the inner of the containers, which via the lock gate is made accessible from here.

As disclosed, a lid belongs to the container brim, which is designed for enclosing mesh with the container brim, whereby it is ensured that the content in a specific container is not in contact with the surroundings during the transport.

As disclosed, the lock gate includes a gripper for separation of container and belonging lid, such that the container's inner is made accessible from the treatment and care areas when a given container is led to a given lock gate. With such an arrangement, it is ensured that personnel and patients do not have a need to contact the container's exterior during any part of the task of filling or emptying hereof. A container's lid is taken off automatically by the gripper, for example via movable parts, which can grip around a protruding flange on the lid such that the lid, subsequently automatically and without contact with the personnel, is removed from its mesh with the container opening.

As disclosed, there is used two different types of containers, a first type for transport of material to, and another type for transport away from, the treatment and care areas. Hereby, the two types of containers can be manufactured and optimized according to each own function. For example, the containers, which are to receive trash and used material and thereby be used on the non-clean transport route, should have an opening, which faces upwards, where the containers, which are used on the clean transport route and are used for transport of goods towards a ward, can quite well have an opening in a vertical side surface.

Embodiments of the invention also relate to, as disclosed, a method for operation of

transport and storage system for servicing of a number of treatment and care areas in a hospital. According to embodiments of the invention, there is thus, to each care area, connected a clean transport route for delivery of goods to the treatment and care area and a non-clean transport route for removal of goods from the treatment and care area, where the two transport routes are separated and furthermore, all transport routes and all storage areas for containers are in connection with a computer system. This system emits signals in order to initialize the clean transport route for moving of a container containing clean material towards the treatment and care area and emits signals in order to initialize the non-clean transport route for moving of containers containing non-clean material away from a treatment and care area. The transport routes, which are here mentioned, can for example consist of robot trolleys, which can transport a container in both the one and the other direction and if a container is thus moved towards or away from a treatment and care area therefore depends on which control signals the trolleys receive. Each transport route must handle both filled and empty containers since the clean, but empty containers must be sent away from treatment and care areas for washing and renewed filling and this will typically occur on the transport route for clean containers, while empty containers of the non-clean type must be sent to the treatment and care areas in order to receive non-clean material here, and this transport will typically occur on the transport route for non-clean material.

It is preferred, as disclosed, that each container's position and filling state is constantly registered in the computer system such that it can hereby be ensured that there does not occur transport of non-clean material on the transport routes for the clean material and opposite.

As disclosed, input possibilities of different types belong to the computer system: it can be directly from a user via ordinarily known user interface; it can be via communication to the computer system of changed

states on the hospital's treatment and care areas, and finally it can be communication to the computer system of registrations of scheduled changes in states of the hospital's treatment and care areas.

The computer system thus integrates, in one or another extent, with the possible patient and treatment oriented systems, which are to be found in advance in a hospital. Hereby, the workload is reduced for the staff, since many tasks, such as ordering of food, ordering of treatment items, ordering of linen and much else can occur automatically, when for example a patient is enrolled or an operation is planned and the data is entered into an IT-system. Together with well-known user orders, this system provides an especially comprehensive flexibility.

As disclosed, the user has, during the use of a simple user interface, possibility of submission of simple orders, but the computer system additionally has the feature that it can prompt users, who register a change on a specific department, for example registration of a patient, and ask the user to actively consider a number of questions about possible future deliveries linked to the patient, such that the computer system actively helps to ensure that all necessary materials are present for receiving a patient in a care and treatment department.

As disclosed, there is to the computer system connected a surveillance facility for each transport container such that the impacts that the container receives during the transport can be registered and passed on to a user. Hereby, a user becomes capable of determining if the transport has had negative impact on the transported material. In some cases, this can even be especially decisive for the material's applicability and this function is therefore quite important, especially in hospital environments.

The invention will now be explained more fully with reference to the

PATENTCLAIMS

1. Transport and storage system for servicing of a number of treatment and care areas in a hospital, where, to each treatment and care area a transport route is connected, which is reserved for transport of clean goods to or from a treatment and care area and a transport route is connected, which is reserved for transport of non-clean goods to or from the treatment and care area, where the two transport routes are separated and where a partition is provided between the transport routes and the treatment and care areas characterized in that the partition includes a lock gate and that the transport routes include a conveyor to containers with lids, which conveyor is connected to the lock gate, where the container has a brim and the lock gate has an internal opening brim, enclosing the container brim, that the container comprises a lid designed for enclosing mesh with the container brim and that the lock gate includes a gripper for separation of container and lid such that the container's inner is made accessible from the treatment and care areas when a specific container is led to a specific lock gate.

2. Transport and storage system, as stated in claim 1, characterized in that a first type of containers are used on the transport route, which is reserved for clean goods to the treatment and care area, and another type of containers are used on the transport route, which is reserved non-clean goods from the treatment and care area.