A carrier for an enteral feeding device including a pump, enteral feeding containers and tubing. The carrier has a case for holding the enteral feeding pump, and a shoulder strap for carrying the case. The shoulder strap has one or more compartments for holding the one or more enteral feeding containers. The carrier permits a patient to receive nutrition from the enteral feeding device concealed within the carrier while the patient is mobile.
CARRIER FOR ENTERAL FEEDING DEVICE

FIELD OF THE INVENTION

[0001] The present invention generally relates to carriers, and more particularly to a carrier for carrying an enteral feeding device.

BACKGROUND OF THE INVENTION

[0002] Persons having enteral feeding needs must deal with the problem of moving the necessary feeding equipment from location to location. Such equipment typically includes a pump, one or more fluid containers (e.g., bags of feeding fluid and rinsing fluid), and the associated tubing. This equipment is bulky and cumbersome to carry. In the past, such equipment has simply been moved from place to place, as needed, but there has been no convenient way of carrying the equipment and using it while it is being carried. As a result, the mobility of a person using the equipment is limited.

[0003] There is a need, therefore, for a device which allows such equipment to be carried in a convenient manner and to be used while it is being carried.

SUMMARY OF THE INVENTION

[0004] In general, this invention is directed to a carrier for carrying an enteral feeding device of the type comprising an enteral feeding pump and one or more enteral feeding containers. The carrier comprises a case for holding the enteral feeding pump, and a shoulder strap for carrying the case. In an exemplary embodiment, the shoulder strap has one or more compartments adapted to hold enteral feeding containers.

[0005] In an exemplary embodiment, the shoulder strap comprises an exterior layer on an outward facing side of the strap and an interior layer on an inward facing side of the strap. The exterior and interior layers of the shoulder strap define a compartment for holding at least one enteral feeding container. The compartment has a lower end which opens into an interior of the case.

[0006] Other objects and features will be in part apparent and in part pointed out hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] FIG. 1 is a perspective showing how a carrier of this invention may be worn;

[0008] FIG. 2 is a perspective of the carrier of FIG. 1;

[0009] FIG. 3 is a vertical section in the plane of 3-3 of FIG. 2;

[0010] FIG. 4 is an enlarged view of a portion of the carrier of FIG. 2 showing a front flap of the carrier in an open position for viewing a display of a pump in the carrier;

[0011] FIG. 5 is a perspective of the carrier of FIG. 2 with the straps opened to show components of an enteral feeding set in the carrier;

[0012] FIG. 6 is an enlarged view of a portion of the carrier of FIG. 5 with a zipper open to show a suspension device for suspending an enteral feeding container; and

[0013] FIG. 7 is a section taken in the vertical plane of line 7-7 of FIG. 2.

[0014] Corresponding reference characters indicate corresponding parts throughout the drawings.

DETAILED DESCRIPTION

[0015] Referring to the drawings, and particularly to FIGS. 1-3, a carrier according to this invention is designated in its entirety by the reference number 10. The carrier 10 comprises a case, generally designated 12, and a shoulder strap, generally designated 14, for carrying the case 12. In an exemplary embodiment, the carrier 10 permits a patient to receive nutrition from an enteral feeding device concealed within the carrier 10 while the patient is mobile. As shown in FIG. 3, the enteral feeding device includes an enteral feeding pump P, first and second enteral feeding containers C1, C2, and associated tubing comprising tubing T1 and T2 extending from respective containers to the pump P, and tubing T3 extending from the pump for delivery of fluid to the person using the carrier. The pump P, containers C1, C2 and associated tubing T1, T2, T3 are of conventional design and operation. By way of example, the first container C1 may be a bag containing an enteral feeding liquid and the second container C2 may be a bag containing a rinse liquid. While the carrier 10 is described as holding an enteral feeding device during use, it may be utilized for other purposes as well, such as for holding intravenous (IV) infusion sets, for example.

[0016] As illustrated in FIGS. 2-4, the case 12 of the carrier 10 is preferably box-shaped, though other shapes are possible. The case 12 comprises a bottom wall 24, a front wall 26 facing away from the patient during use, a back wall 28 formed opposite the front wall 26, and a pair of opposing side walls 32 combining to define an interior space 36 for receiving the enteral feeding pump P. The interior space 36 may be fitted to a specific make or model of enteral feeding pumps. The interior space 36 may also contain means for restraining the pump P within the interior space, such as straps for example.

[0017] In the embodiment illustrated in FIG. 4, the front wall 26 has a transparent wall portion 38 for viewing a display 42 on the feeding pump P within the case 12. The transparent wall portion 38 comprises all or a substantial surface area of the front wall 26 and is rectangular shaped as shown, though other sizes and shapes are within the scope of this invention. The transparent wall portion 38 is formed of a suitable flexible material, PVC for example, but it may be rigid (e.g., constructed from glass). A non-transparent flap 54 is hinged along a bottom edge of the front wall 26 and is movable between an open position (FIG. 4) that allows viewing of the display 42 of the enteral feeding pump P through the transparent wall portion 38, and a closed position (FIG. 2) that conceals the transparent wall portion. The flap 54 may be hinged on any other edge and/or wall of the case. The flap 54 is sized and shaped to cover at least the transparent wall portion 38 in the closed position. As seen in FIG. 4, the flap 54 may be secured in its closed position by a suitable releasable fastening mechanism, such as cooperating strips 56, 58 of hook-and-loop material on the inner surface of the flap near its top edge and the outer surface of the front wall 26 of the case near its top edge. Alternatively, other releasable fastener mechanisms, such as slide fasteners and snaps, may be employed to close the flap 54 so as to conceal the transparent wall portion 38. The transparent wall portion 38 and flap 54 may be formed on any surface of the case 12 to accommodate a wide range of pumps with variably placed displays.
Returning to FIG. 2, the strap 14 comprises an upper strap portion 62 for placement over the shoulder of the patient, and first and second lower strap portions 66 and 68, respectively, extending down from the upper strap portion to the case 12. The upper strap portion 62 comprises two strap members 72, 74 and a snap-connector 78, though other releasable connectors might be used. Desirably, at least one of the strap members 72, 74 of the upper strap portion is adjustable in length. Alternatively, the upper strap portion 62 is composed of a single strap member connecting the first and second lower strap portions 66, 68.

Referring to FIG. 3, each lower strap portion 66, 68 comprises an interior layer 80 and an opposing exterior layer 82. The layers 80, 82 of the first lower strap portion 66 define a first compartment 86 for holding the first container C1, and the layers 80, 82 of the second lower strap portion 68 define a second compartment 88 for holding the second container C2. Access to each compartment 86, 88 is enabled by a slide fastener 90 on the interior layer 80, though other releasably fastening mechanisms such as hook-and-loop structures and snaps may be employed.

As illustrated in FIGS. 2-5, the interior layers 80 of the first and second lower strap portions 66, 68 are integrally connected to form a cover portion 94 over the interior space 36 of the case 12. The lower end of each compartment 86, 88 opens into the interior space 36 to form a continuous, carrier space sized to accommodate the pump P and the tubing T1, T2 from the containers C1, C2 to the pump P. As best illustrated in FIG. 3, the slide fastener 90 runs down from adjacent the top of the first lower strap portion 66, over the cover portion 94 and up to adjacent the top of the second strap portion 68. Alternately, the cover portion 94 and the lower strap portions 66, 68 may have separate slide fasteners for accessing the interior space and the compartments, respectively. Desirably, the exterior layers 82 of the lower strap portions 66, 68 form the side walls 32 of the case 12. Alternatively, the exterior layers 82 of the lower strap portions 66, 68 may terminate at the case 12.

The shoulder strap 14 may have other configurations within the scope of this invention. By way of example, the interior layers 80 of the lower shoulder strap portions 66, 68 may not be integrally connected, and the case 12 may have a separate cover.

A method of using the carrier for holding an enteral feeding device is illustrated in FIGS. 3 and 5. Opening the slide fastener 90 provides access to the carrier space to allow for placement of the various components of the enteral feeding device in the case 12. The enteral feeding pump P is placed in the interior space 36 of the case 12, and the enteral feeding containers C1, C2 are suspended from suspension devices 102, 104, respectively, provided in the compartments 86, 88 adjacent the upper ends of the lower strap portions 66, 68 (see FIG. 3). As best illustrated in FIG. 6, each suspension device 102, 104 comprises a strap 108 having releasable hook-and-loop fastening components 110, 112. The strap 108 is adapted to be looped around a support or handle 116 of a respective container C1, C2 and then fastened in place to hold the container at a desired height in its respective compartment 86, 88. Desirably, when the carrier 10 is being used, the suspension devices 102, 104 hold the containers C1, C2 at heights above the top of the pump P in the case 12. Other suspension devices may be used.

Suspending the containers C1, C2 at an elevation above the pump P in the case 12 allows for a positive head height and gravity-assisted flow of solution from the containers C1, C2 to the pump P. The containers C1, C2 are connected to the pump P via concealed tubing T1, T2 that resides within the enclosed carrier space. The gastric feeding tube T3 originating from the P, in turn, exits the carrier 10 to supply nutrition to the patient through an outlet 120 formed in the interior layer 80 of a lower strap portion 68, as illustrated in FIG. 5. Desirably, both lower strap portions 66, 68 have outlets 120, 122 to accommodate user preference. As illustrated in FIGS. 1-2, the patient can adjust the carrier 10 (by adjusting the length of the upper strap portion 62, for example) to position the outlet 120 over his/her body so as to achieve concealment of the feeding tube T3 and for optimal alignment with a gastrostomy tract formed in the patient for gastric feeding.

FIGS. 3 and 7 illustrate how concealment of the enteral feeding device is achieved with the invention. The case 12 conceals the feeding pump 22, and the shoulder strap 14 conceals the containers C1, C2 and associated tubing T1, T2 and T3. The only component of the feeding equipment located outside the carrier is the feeding tube T3 exiting through the outlet 120, as illustrated in FIGS. 2 and 7.

The case 12 and shoulder strap 14 of the carrier 10 may be constructed of a flexible material (e.g., nylon) that is aesthetically pleasing and collapsible for compact storage during non-use. Other desirable properties of the carrier material are water-impermeability and durability. Alternatively, parts of the carrier 10 may be composed of other materials with differing properties. For example, the case 12 may be formed from a rigid or semi-rigid material so as to better protect the pump P. Other combinations of material can be used to form the carrier 10 within the scope of the invention.

Having described the invention in detail, it will be apparent that modifications and variations are possible without departing from the scope of the invention defined in the appended claims. For example, in the illustrated embodiment, each compartment 86, 88 is sized to hold only one enteral feeding container C1, C2. Alternatively, one or both of the compartments 86, 88 may be sized for holding more than one container. In still other embodiments, only one of the lower strap portions 66, 68 of the carrier may be configured to hold a container. In another embodiment, the tubing T3 is directed through a belt attached to the case 12, as shown in U.S. Pat. No. 7,282,044 assigned to Sherwood Services AG. The belt can be used to secure the case 12 around the waist of the patient.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained. A patient that requires enteral feeding can use a carrier of this invention to carry the necessary equipment in a convenient manner and to use the equipment while it is being carried. Further, the equipment is substantially entirely concealed in the carrier during use. The carrier is compact, comfortable to wear and readily collapsible for easy storage when not in use. Using a shoulder strap enables the enteral feeding container(s) of the equipment to be carried at a positive head height for gravity feed of the fluid. In the illustrated embodiment, the carrier can be worn on either shoulder. Further, the carrier is economical to manufacture.

As various changes could be made in the above constructions, products, and methods without departing from the scope of the invention, it is intended that all matter con-
When introducing elements of the present invention or the preferred embodiments thereof, the articles “a”, “an”, “the” and “said” are intended to mean that there are one or more of the elements. The terms “comprising”, “including” and “having” are intended to be inclusive and mean that there may be additional elements other than the listed elements.

What is claimed is:

1. A carrier for carrying an enteral feeding device, said feeding device comprising an enteral feeding pump and one or more enteral feeding containers, said carrier comprising: a case for holding the enteral feeding pump; a shoulder strap for carrying the case; and said shoulder strap having one or more compartments adapted to hold the enteral feeding containers.

2. The carrier of claim 1, further comprising a suspension device for suspending an enteral feeding container in each compartment of said one or more compartments at a positive head height when the carrier is being worn with the shoulder strap over a shoulder.

3. The carrier of claim 1, wherein said shoulder strap comprises an upper strap portion adapted to be placed over a shoulder and first and second lower strap portions extending down from the upper strap portion to the case, and wherein said one or more compartments are located in at least one of said first and second lower strap portions.

4. The carrier of claim 1, further comprising at least one closure for opening and closing the one or more compartments, said at least one closure being positioned on the shoulder strap so that it faces generally toward a person wearing the strap thereby to conceal the closure.

5. The carrier of claim 3, wherein at least one of said first and second lower strap portions has opposing interior and exterior layers, the opposing interior and exterior layer of at least one lower strap portion defining one compartment of said one or more compartments.

6. The carrier of claim 5, wherein said one compartment opens into an interior of the case.

7. The carrier of claim 5, wherein said at least one lower strap portion has an outlet through which tubing from the enteral feeding pump can pass to a person using the carrier.

8. The carrier of 7, wherein said outlet is formed in the interior layer of the at least one lower strap portion.

9. The carrier of claim 5, further comprising a suspension device for suspending an enteral feeding container in said one compartment at a positive head height when the carrier is being worn with the shoulder strap over a shoulder.

10. The carrier of claim 3, wherein the first and second lower strap portions have interior and exterior layers defining first and second compartments, respectively, for holding first and second enteral feeding containers, respectively, and wherein each compartment has a lower end which opens into an interior of the case.

11. The carrier of claim 10, wherein the interior layers of said first and second lower strap portions are integrally connected by a cover portion that extends over a top of the case and functions as a cover of the case.

12. The carrier of claim 11, further comprising a closure extending along the interior layers of the first and second lower strap portions and along said cover portion whereby the first and second compartments and the top of the case may be opened and closed by opening and closing the closure.

13. The carrier of claim 1, wherein said case has a transparent wall portion to allow viewing of an enteral feeding pump inside the case.

14. The carrier of claim 13, further comprising a non-transparent flap on the case movable between an open position for allowing viewing through the transparent wall portion and a closed position covering the transparent portion.

15. The carrier of claim 1 in combination with one or more of the following: an enteral feeding pump, one or more enteral feeding containers, and one or more tubes.

16. A carrier for carrying an enteral feeding device, said feeding device comprising an enteral feeding pump and at least one enteral feeding container, said carrier comprising: a case for holding the enteral feeding pump; a shoulder strap for carrying the case, said shoulder strap comprising an exterior layer on an outward facing side of the strap and an interior layer on an inward facing side of the strap; and a compartment between said exterior and interior layers of the shoulder strap adapted to hold at least one enteral feeding container, said compartment having a lower end which opens into an interior of the case.

17. The carrier of claim 16, wherein said interior layer of the shoulder strap comprises a cover portion that extends over a top of the case and functions as a cover of the case.

18. The carrier of claim 17, further comprising a zipper closure extending along the interior layer from a location toward the upper end of the compartment to a location across the cover portion of the shoulder strap whereby the compartment and the top of the case may be opened and closed by opening and closing the zipper closure.

19. The carrier of claim 16, wherein said case has a transparent front wall portion to allow viewing of an enteral feeding pump inside the case.

20. The carrier of claim 19, further comprising a non-transparent flap on the case movable between an open position for allowing viewing through said transparent front wall portion and a closed position covering said transparent front wall portion.

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