

monitoring, tracking and reporting. For example such a method could be very important in schools in Australia where the incidences of skin cancer are very high.

SUMMARY OF THE INVENTION

~~In a first aspect, there is provided a group monitoring system for dispenser usage compliance within a predetermined group of interest in a predetermined facility type comprising the steps of: providing a plurality of dispensers, providing a dispenser data collection system operably connected to each dispenser, capable of providing information, the information including a unique dispenser identifier for each dispenser, a number of dispenser usage events that each dispenser was used; receiving the information from the data collection system and determining the predetermined group within which each dispenser is associated; determining the number of dispenser usage events within the predetermined group within a predetermined time period; determining a benchmark which corresponds to dispenser usage opportunities particular to the predetermined group and particular to the predetermined time period; calculating a dispenser usage compliance index particular to the predetermined group and particular to the predetermined time period by dividing the dispenser usage events for the predetermined group and the predetermined time period by a denominator wherein the denominator equals the benchmark.~~In one aspect of the present invention, there is provided a group monitoring system for dispenser usage compliance within a predetermined group of interest in a predetermined facility type, the system comprising

a plurality of dispensers and a dispenser data collection system operably connected to each dispenser, the dispenser data collection system being capable of providing information, the information including a unique dispenser identifier for each dispenser and a number of dispenser usage events that each dispenser was used, the system comprising the steps of: providing a predetermined benchmark which corresponds to dispenser usage opportunities particular to the predetermined group and particular to a predetermined time period; receiving the information from the dispenser data collection system and determining the predetermined group within which each dispenser is associated; determining the number of dispenser usage events within the predetermined group within a predetermined time period; determining census data particular to the predetermined group and particular to the predetermined time period; and calculating a dispenser usage compliance index particular to the predetermined group and particular to the predetermined time period by dividing the dispenser usage events for the predetermined group and the predetermined time period by a denominator wherein the denominator equals the predetermined benchmark multiplied by the census data.

_____ In another aspect of the present invention, there is provided a group monitoring system for dispenser usage compliance within a predetermined group of interest in a predetermined facility type comprising the steps of: providing a plurality of dispensers, providing a dispenser data collection system operably connected to each dispenser, for of providing information, the information including a unique dispenser identifier for each

dispenser, a number of dispenser usage events that each dispenser was used; providing a predetermined benchmark which corresponds to dispenser usage opportunities particular to the predetermined group and particular to a predetermined time period; receiving the information from the data collection system and determining the predetermined group within which each dispenser is associated; determining the number of dispenser usage events within the predetermined group and the predetermined time period; determining census data particular to the predetermined group and particular to the predetermined time period; calculating a dispenser usage compliance index particular to the predetermined group and particular to the predetermined time period by dividing the dispenser usage events for the predetermined group and the predetermined time period by a denominator wherein the denominator equals the predetermined benchmark multiplied by the census data.

The number of dispenser usage events within a predetermined time period may equal a number of times the dispenser has been activated however a plurality of activations within a predetermined activation period is considered a single dispenser usage event. The predetermined activation period is typically

The benchmark in the denominator may be multiplied by census data. The census data may be one of bed occupancy rate in the predetermined group, patient days in the predetermined group, patient visits in the predetermined group, bed-hours of care in the predetermined group and staff in the predetermined group.

The group monitoring system for dispenser usage compliance may include the step of determining a hand hygiene compliance index. The hand hygiene compliance index may include information from dispenser usage only; weighted information from the dispenser usage compliance index and one of survey compliance data or direct observation compliance data. Alternatively, the hand hygiene compliance index includes weighted information from the dispenser usage compliance index and survey compliance data and direct observation compliance data.

The dispenser data collection system may use a frequency chosen from the group consisting of between 400 and 450 MHz system, between 850 and 950 MHz system and between 2.4 and 2.5 GHz. Alternatively, the dispenser data collection system may be a hard wired system.

The dispenser data collection system may use a frequency between 850 and 950 MHz system and has a transmission power of up to 1000 milliwatts. The dispenser data collection system may include a plurality of hubs for receiving data from the plurality of dispensers. Each hub receives data from one or more dispensers and the distance between each dispenser and its associated hub is no greater than 5740 feet. The data may be encrypted.

Disclosed herein is a~~n another aspect of the~~ group monitoring system for dispenser usage data collection comprising: a plurality of dispensers each having a sensor operably

WHAT IS CLAIMED AS THE INVENTION IS:

1. In a monitoring system, performing a method of monitoring dispenser usage compliance within a predetermined group of interest in a predetermined facility type, the system comprising a plurality of dispensers and a dispenser data collection system operably connected to each dispenser, the dispenser data collection system being capable of providing information, the information including a unique dispenser identifier for each dispenser and a number of dispenser usage events that each dispenser was used, the method comprising the steps of:

receiving the information from the dispenser data collection system and determining the predetermined group within which each dispenser is associated;

determining the number of dispenser usage events within the predetermined group within a predetermined time period;

determining a benchmark which corresponds to dispenser usage opportunities particular to the predetermined group and particular to the predetermined time period; and

calculating a dispenser usage compliance index particular to the predetermined group and particular to the predetermined time period by dividing the dispenser usage events for the predetermined group and the predetermined time period by a denominator wherein the denominator equals the benchmark.

2. A method of monitoring dispenser usage compliance within a

predetermined group of interest in a facility including a plurality of dispensers, the facility having a predetermined facility type, the method comprising the steps of:

providing a dispenser data collection system operably connected to each dispenser, capable of providing information, the information including a unique dispenser identifier for each dispenser and a number of dispenser usage events that each dispenser was used;

receiving the information from the dispenser data collection system and determining the predetermined group within which each dispenser is associated;

determining the number of dispenser usage events within the predetermined group within a predetermined time period;

determining a benchmark which corresponds to dispenser usage opportunities particular to the predetermined group and particular to the predetermined time period; and

calculating a dispenser usage compliance index particular to the predetermined group and particular to the predetermined time period by dividing the dispenser usage events for the predetermined group and the predetermined time period by a denominator wherein the denominator equals the benchmark.

3. The method as claimed in claim 1 or 2 wherein the number of dispenser usage events within the predetermined time period equals a number of times the dispenser has been activated and wherein a plurality of activations within a predetermined activation period is considered a single

dispenser usage event.

4. The method as claimed in claim 3 wherein the predetermined activation period is between 1 and 4 seconds.

5. The method as claimed in any one of claims 1 to 4 wherein the information further includes the type of product in the dispenser.

6. The method as claimed in any one of claims 1 to 5 wherein the type of product in the dispenser is chosen from a group consisting of hand soap, sanitizer, lotion, cream, sunscreen and body wash.

7. The method as claimed in any one of claims 1 to 6 wherein the predetermined time period is chosen from the group consisting of a shift, a weekday, a weekend day, and a holiday day of each of the predetermined group in the predetermined facility type.

8. The method as claimed in any one of claims 1 to 7 wherein the benchmark varies dependent on the predetermined facility type.

9. The method as claimed in any one of claims 1 to 8 wherein the predetermined facility type is chosen from the group consisting of a health care facility, a food processing facility, a food service facility, an educational facility and a manufacturing facility.

10. The method as claimed in any one of claims 1 to 9 wherein the predetermined facility type is chosen from the group consisting of a teaching hospital, a non-teaching hospital, a long term care facility, a rehabilitation facility, a free standing surgical center, a health care professional office, a dental office, a veterinarian facility and a community care facility.

11. The method as claimed in any one of claims 1 to 10 wherein the benchmark varies dependent on the predetermined group of interest.

12. The method as claimed in any one of claims 1 to 11 wherein the predetermined group of interest is chosen from the group consisting of medical unit, surgical unit, critical care unit, intensive care unit, emergency care unit, pediatric unit, emergency unit, outpatient unit, specialty care unit, dermatology unit, endocrinology unit, gastroenterology, internal medicine unit, oncology unit, neurology unit, orthopedic unit, ophthalmic unit, ear nose and throat unit, neonatal unit, obstetrics and gynecology unit, cardiac unit, psychiatric unit, post-operative recovery unit, radiology unit, plastic surgery unit and urology unit.

13. The method as claimed in any one of claims 1 to 12 wherein the predetermined group is chosen from the group consisting of a bed, a room, a ward, a unit, a floor, a facility and a hospital group.

14. The method as claimed in any one of claims 1 to 13 further including the step of determining a hand hygiene compliance index wherein the hand

hygiene compliance index includes at least the dispenser usage compliance index.

15. The method as claimed in claim 14 wherein the hand hygiene compliance index includes weighted information from the dispenser usage compliance index and one of survey compliance data and direct observation compliance data.

16. The method as claimed in claim 14 or 15 wherein the hand hygiene compliance index includes weighted information from the dispenser usage compliance index and survey compliance data and direct observation compliance data.

17. The method as claimed in any one of claims 1 to 16 wherein the dispenser data collection system uses a frequency chosen from the group consisting of between 400 and 450 MHz system, between 850 and 950 MHz system and between 2.4 and 2.5 GHz.

18. The method as claimed in any one of claims 1 to 16 wherein the dispenser data collection system is a hard wired system.

19. The method as claimed in any one of claims 1 to 17 wherein the dispenser data collection system uses a frequency between 850 and 950 MHz system and has a transmission power between 10 and 1000 milliwatts.

20. The method as claimed in any one of claims 1 to 18 wherein the dispenser data collection system further includes a network device for receiving data from the plurality of dispensers.
21. The method as claimed in claim 20 wherein said network device is a hub.
22. The method as claimed in claim 20 wherein said network device is selected from the group consisting of wireless network device, wireless hub, Ethernet hub, repeater hub, switch, Ethernet switch, bridge, router, Ethernet router, wireless router, gateway, and gateway router.
23. The method as claimed in any one of claims 20 to 22 wherein said network device communicates wirelessly and the distance between each dispenser and its associated network device is no greater than 5740 feet.
24. The method as claimed in any one of claims 20 to 22 wherein the dispenser data collection system further includes a plurality of network devices for receiving data from the plurality of dispensers.
25. The method as claimed in any one of claims 1 to 22 wherein data sent by the dispenser data collection system is encrypted.
26. The method as claimed in any one of claims 1 to 25 wherein the benchmark varies dependent on the predetermined facility type.

27. The method as claimed in any one of claims 1 to 26 wherein the predetermined facility type is chosen from the group consisting of rehabilitation facility, teaching healthcare facility, non-teaching healthcare facility, chronic care facility, community care facility, school, educational facility, food service facility, food processing facility, outdoor work site and commercial facility.
28. The method as claimed in any one of claims 1 to 27 wherein the benchmark varies dependent on predetermined group of interest.
29. The method as claimed in any one of claims 1 to 28 wherein the predetermined group of interest is chosen from the group consisting of medical unit, surgical unit, critical care unit, intensive care unit, emergency care unit, pediatric unit, emergency unit, outpatient unit, rehabilitation unit, long term care unit, specialty care unit, dermatology unit, endocrinology unit, gastroenterology, internal medicine unit, oncology unit, neurology unit, orthopedic unit, ophthalmic unit, ear nose and throat unit, neonatal unit, obstetrics and gynecology unit, cardiac unit, psychiatric unit, post-operative recovery unit, radiology unit, plastic surgery unit and urology unit.
30. The method as claimed in any one of claims 1 to 29 wherein the predetermined group of interest is chosen from the group consisting of a bed, a room, a ward, a unit, a floor and a facility.
31. The method as claimed in any one of claims 1 to 30 wherein the

benchmark in the denominator is multiplied by census data.

32. The method as claimed in claim 31 wherein the census data is chosen from the group consisting of bed occupancy rate in the predetermined group, patient days in the predetermined group, patient visits in the predetermined group, bed-hours of care in the predetermined group and staff in the predetermined group.

33. A group monitoring system for dispenser usage data collection comprising:

a plurality of dispensers each having a sensor operably attached thereto for collecting data from the dispenser;

a network device capable of receiving data from one of said plurality of dispensers;

wherein said data includes a unique dispenser identifier for each dispenser and a number of dispenser usage events that each dispenser was used.

34. The group monitoring system as claimed in claim 33 wherein the data further includes the type of product in the dispenser.

35. The group monitoring system as claimed in claim 33 or 34 wherein the type of product in the dispenser is chosen from a group consisting of hand soap, sanitizer, lotion, cream, sunscreen and body wash.

36. The group monitoring system as claimed in any one of claims 33 to 35, further including a server for processing said data, said server including one or more computers capable of receiving data from said network device.

37. The group monitoring system as claimed in any one of claims 33 to 36 wherein said network device is a hub.

38. The group monitoring system as claimed in any one of claims 33 to 36 wherein said network device is selected from the group consisting of wireless network device, wireless hub, Ethernet hub, repeater hub, switch, Ethernet switch, bridge, router, Ethernet router, wireless router, gateway, and gateway router.

39. The group monitoring system as claimed in any one of claims 33 to 38 further including a plurality of network devices, each capable of receiving data from one of said plurality of dispensers.

40. The group monitoring system as claimed in any one of claims 33 to 39 wherein said data is transmitted at a frequency between 850 and 950 MHz.

41. The group monitoring system as claimed in any one of claims 33 to 40 wherein said data is encrypted.

42. The group monitoring system as claimed in any one of claims 33 to 41 wherein each dispenser has a transmission power between 10 and 1000

milliwatts.

WHAT IS CLAIMED AS THE INVENTION IS:

1. A group monitoring system for dispenser usage compliance within a predetermined group of interest in a predetermined facility type, the system comprising a plurality of dispensers and a dispenser data collection system operably connected to each dispenser, the dispenser data collection system being capable of providing information, the information including a unique dispenser identifier for each dispenser and a number of dispenser usage events that each dispenser was used, the system comprising the steps of:

providing a predetermined benchmark which corresponds to dispenser usage opportunities particular to the predetermined group and particular to a predetermined time period;

receiving the information from the dispenser data collection system and determining the predetermined group within which each dispenser is associated;

determining the number of dispenser usage events within the predetermined group within a predetermined time period;

determining census data particular to the predetermined group and particular to the predetermined time period; and

calculating a dispenser usage compliance index particular to the predetermined group and particular to the predetermined time period by dividing the dispenser usage events for the predetermined group and the predetermined time period by a denominator wherein the denominator equals the predetermined benchmark multiplied by the census data.

2. A group monitoring system for dispenser usage compliance within a predetermined group of interest in a predetermined facility type comprising the steps of:

providing a plurality of dispensers,

providing a dispenser data collection system operably connected to each dispenser, for of providing information, the information including a unique dispenser identifier for each dispenser, a number of dispenser usage events that each dispenser was used;

providing a predetermined benchmark which corresponds to dispenser usage opportunities particular to the predetermined group and particular to a predetermined time period;

receiving the information from the data collection system and determining the predetermined group within which each dispenser is associated;

determining the number of dispenser usage events within the predetermined group and the predetermined time period;

determining census data particular to the predetermined group and particular to the predetermined time period;

calculating a dispenser usage compliance index particular to the predetermined group and particular to the predetermined time period by dividing the dispenser usage events for the predetermined group and the predetermined time period by a denominator wherein the denominator equals the predetermined benchmark multiplied by the census data.

3. The group monitoring system for dispenser usage compliance as claimed in claim 1 or 2 wherein the number of dispenser usage events within a predetermined

time period equals a number of times the dispenser has been activated and wherein a plurality of activations within a predetermined activation period is considered a single dispenser usage event.

4. The group monitoring system for dispenser usage compliance as claimed in claim 3 wherein the predetermined activation period is between 1 and 4 seconds.

5. The group monitoring system for dispenser usage compliance as claimed in any one of claims 1 to 4 wherein the information further includes the type of product in a dispenser.

6. The group monitoring system for dispenser usage compliance as claimed in any one of claims 1 to 5 wherein the type of product is chosen from a group consisting of hand soap, sanitizer, lotion, cream, sunscreen and body wash.

7. The group monitoring system for dispenser usage compliance as claimed in any one of claims 1 to 6 wherein the predetermined time period is chosen from a group consisting of a shift, and one of a weekday, a weekend day, and a holiday day, each of the predetermined group in the predetermined facility type.

8. The group monitoring system for dispenser usage compliance as claimed in any one of claims 1 to 7 wherein the predetermined benchmark varies dependent on the predetermined facility type.

9. The group monitoring system for dispenser usage compliance as claimed in any one of claims 1 to 8 wherein the predetermined facility type is one of a health care facility, a food processing facility, a food service facility, an educational facility and a manufacturing facility.

10. The group monitoring system for dispenser usage compliance as claimed in any one of claims 1 to 8 wherein the predetermined facility type is chosen from a group consisting of a teaching hospital, a non-teaching hospital, a long term care facility, rehabilitation facility, a free standing surgical center, a health care professional office, a dental office, a veterinarian facility and a community care facility.

11. The group monitoring system for dispenser usage compliance as claimed in any one of claims 1 to 10 wherein the predetermined benchmark varies dependent on predetermined group of interest.

12. The group monitoring system for dispenser usage compliance as claimed in any one of claims 1 to 11 wherein the predetermined group of interest is chosen from a group consisting of medical unit, surgical unit, critical care unit, intensive care unit, emergency care unit, pediatric unit, emergency unit, outpatient unit, specialty care unit, dermatology unit, endocrinology unit, gastroenterology, internal medicine unit, oncology unit, neurology unit, orthopedic unit, ophthalmic unit, ear nose and throat unit, neonatal unit, obstetrics and gynecology unit, cardiac unit, psychiatric unit, post-operative recovery unit, radiology unit, plastic surgery unit and urology unit.

13. The group monitoring system for dispenser usage compliance as claimed in any one of claims 1 to 12 wherein the predetermined group is chosen from a group consisting of a bed, a room, a ward, a unit, a floor, a facility and a hospital group.

14. The group monitoring system for dispenser usage compliance as claimed in any one of claims 1 to 13 wherein the census data is chosen from a group consisting of bed occupancy rate in the predetermined group, patient days in a predetermined group, patient visits in the predetermined group, bed-hours of care in the predetermined group and staff in the predetermined group.

15. The group monitoring system for dispenser usage compliance as claimed in any one of claims 1 to 14 further including a step of determining a hand hygiene compliance index wherein the hand hygiene compliance index includes at least the dispenser usage compliance index.

16. The group monitoring system for dispenser usage compliance as claimed in claim 15 wherein the hand hygiene compliance index includes weighted information from the dispenser usage compliance index and one of survey compliance data and direct observation compliance data.

17. The group monitoring system for dispenser usage compliance as claimed in claim 15 wherein the hand hygiene compliance index includes weighted information from the dispenser usage compliance index and survey compliance data and direct observation compliance data.

18. The group monitoring system for dispenser usage compliance as claimed in any one of claims 1 to 17 wherein the dispenser data collection system uses a frequency chosen from a group consisting of between 400 and 450 MHz system, between 850 and 950 MHz system and between 2.4 and 2.5 GHz.

19. The group monitoring system for dispenser usage compliance as claimed in any one of claims 1 to 18 wherein the dispenser data collection system uses a frequency between 850 and 950 MHz system and has a transmission power of up to 1000 milliwatts.

20. The group monitoring system for dispenser usage compliance as claimed in claim 18 wherein the dispenser data collection system is a hard wired system.

21. The group monitoring system as claimed in any one of claims 1 to 20 wherein the dispenser data collection system further includes a network device for receiving data from the plurality of dispensers.

22. The group monitoring system as claimed in claim 21 wherein said network device is a hub.

23. The group monitoring system as claimed in claim 21 wherein said network device is selected from the group consisting of wireless network device, wireless hub, Ethernet hub, repeater hub, switch, Ethernet switch, bridge, router, Ethernet router, wireless router, gateway, and gateway router.

24. The group monitoring system as claimed in any one of claims 21 to 23 wherein said network device communicates wirelessly and the distance between each dispenser and its associated network device is no greater than 5740 feet.

25. The group monitoring system as claimed in any one of claims 20 to 24 wherein the dispenser data collection system further includes a plurality of network devices for receiving data from the plurality of dispensers.

26. The group monitoring system as claimed in any one of claims 21 to 25, further including a step of providing a server for processing said data, said server including one or more computers capable of receiving data from said network device

27. The group monitoring system for dispenser usage compliance as claimed in any one of claims 1 to 20 wherein the dispenser data collection system further includes a plurality of hubs for receiving data from the plurality of dispensers.

28. The group monitoring system for dispenser usage compliance as claimed in claim 27 wherein each hub receives data from up to 10,000 dispensers and the distance between each dispenser and its associated hub is no greater than 5740 feet.

29. The group monitoring system for dispenser usage compliance as claimed in any one of claims 1 to 28 wherein the data is encrypted.

30. The group monitoring system for dispenser usage compliance as claimed in any one of claims 1 to 8 wherein the predetermined facility type is chosen from a group consisting of rehabilitation facility, a teaching healthcare facility, non-teaching healthcare facility, a chronic care facility, a community care facility, a school, and educational facility, a food service facility, a food processing facility, an outdoor work site and a commercial facility.

31. The group monitoring system for dispenser usage compliance as claimed in claim 30 wherein the predetermined benchmark varies dependent on predetermined group of interest.

32. The group monitoring system for dispenser usage compliance as claimed in claim 31 wherein the predetermined group of interest is chosen from a group consisting of medical unit, surgical unit, critical care unit, intensive care unit, emergency care unit, pediatric unit, emergency unit, outpatient unit, rehabilitation unit, long term care unit, specialty care unit, dermatology unit, endocrinology unit, gastroenterology, internal medicine unit, oncology unit, neurology unit, orthopedic unit, ophthalmic unit, ear nose and throat unit, neonatal unit, obstetrics and gynecology unit, cardiac unit, psychiatric unit, post-operative recovery unit, radiology unit, plastic surgery unit and urology unit.

33. The group monitoring system for dispenser usage compliance as claimed in claim 32 wherein the predetermined group is chosen from a group consisting of a bed, a room, a ward, a unit, a floor and a facility.

34. The group monitoring system for dispenser usage compliance as claimed in claim 32 or 33 wherein the census data is chosen from a group consisting of bed occupancy rate in the predetermined group, patient days in the predetermined group, patient visits in the predetermined group, bed-hours of care in the predetermined group and staff in the predetermined group.