WHAT IS CLAIMED IS:

1. A multi-use lancing device comprising:

a housing having a lancet opening and containing a supply reel and a storage reel;

an elongated flexible carrying tape configured for reel-to-reel transfer from the supply to the storage reel; and

a plurality of lancets sequentially positioned along the tape member and each having a lancet length and a distal portion defining a sharp tip;

wherein a substantial portion of the lancet length is non-circular in cross section;

wherein at least the distal portions of the lancets are moveable relative to the carrying tape from a lancet storage position to a lancet activating position;

wherein the lancets are in the storage position when wrapped around the supply reel;

wherein the lancets are in the activating position when adjacent a bend in the carrying tape between the supply and storage reels; and

wherein the sharp tip of a lancet in the activating position is spaced from the carrying tape and directed towards the lancing opening of the housing.

2. The device of claim 1 wherein a substantial portion of the lancet length is high aspect ratio in cross section.

3. The device of claim 2 wherein the lancet length is substantially greater than the lancet width.

4. The device of claim 1 wherein a profile of the lancet is curved while in the storage position and generally linear while in the activating position.

5. The device of claim 1 further comprising a plurality of test media carried on the tape, at least one test media associated with each of the plurality of lancets.

6. The device of claim 5 wherein the lancets include a capillary groove for conveying a bodily fluid sample to an associated test media.

7. The device of claim 6 further comprising an optical sensor, wherein the test media are positioned under a cover transparent to light from the optical sensor.

8. A supply of lancets in reel-to-reel fashion comprising:

a supply reel, a storage reel and a carrying tape configured for reel-to-reel transfer from the supply reel to the storage reel; and

a plurality of lancets each having a body with an elongated length and a sharp tip;

wherein a substantial portion of each lancet body is non-circular in cross section;

wherein the lancets are spaced along the carrying tape with their tips disposed such that at least a portion of the body of each lancets leads the tip of the lancet when the lancet is advanced onto the storage reel.

9. The supply of lancets of claim 8 wherein a substantial portion of the lancets are substantially planar.

10. The supply of lancets of claim 9 wherein, along a majority of the length of the lancet bodies, in cross section the width is at least 3 times the thickness.

11. The supply of lancets of claim 10 wherein, along a majority of the length of the lancet bodies, the lancets are planar.

12. The supply of lancets of claim 10 wherein the lancets are formed by removing portions of a planar tape

13. The supply of lancets of claim 8 wherein the carrying tape defines an activating section between the supply and storage reels, the activating section including at least one bend in the carrying tape.

14. The supply of lancets of claim 13 wherein a lancet adjacent the bend in the activating section of the carrying tape is in an activating position, the activating position having the sharp tip extending away from an adjacent surface of the carrying tape for lancing tissue to obtain a bodily fluid sample.

15. A multi-use device for sampling a bodily fluid comprising:

a housing defining a lancing opening and containing a carrying tape configured to sequentially carry a plurality of lancets from a supply reel containing lancets uncontaminated with the bodily fluid to an activating section of the carrying tape adjacent the lancing opening;

wherein the lancets each include a distal portion with a sharp tip

wherein a substantial portion of the length of each lancet is non-circular in cross section; and

wherein the lancets are positioned on the carrying tape to have a proximal portion thereof lead the distal portion from the supply reel into the activating section.

16. The multi-use sampling device of claim 15 wherein the lancets are slideably positioned on the tape member.

17. The multi-use sampling device of claim 16 wherein the tape member includes a slot and the lancets slide within the slot.

18. The multi-use sampling device of claim 16 further comprising a retaining cover over at least a portion of the lancets, wherein, when activated, the lancets slide between the retaining cover and a surface of the tape member.

19. The multi-use sampling device of claim 16 further comprising an actuator for slidingly advancing and retracting the lancet along the tape for piercing tissue with the sharp tip of the lancet.

20. The multi-use device of claim 15 wherein the lancets are integral with the tape.

21. The multi-use device of claim 20 wherein the carrying tape includes at least one test media associated with each of the lancets for detecting at least one property of the bodily fluid obtained by the lancet.

22. The multi-use device of claim 14 wherein a substantial portion of the length of each lancet is high aspect ratio in cross section.

23. A method for obtaining a bodily fluid sample comprising:

providing a reel-to-reel tape carrying a plurality of lancets that are non-circular in cross section along a major portion of their lengths;

advancing the tape to position a first lancet adjacent a bend in the tape with a sharp tip of the first lancet spaced from the tape;

piercing tissue with the sharp tip of the first lancet; and

after the piercing, advancing the tape to bring the sharp tip of the first lancet closer to the tape.

24. The method of claim 23 further comprising:

after the piercing, positioning a second lancet adjacent the bend in the tape with the sharp tip of the second lancet spaced from the tape; and

piercing tissue with the sharp tip of the second lancet.

25. The method of claim 23 further comprising contacting a bodily fluid produced from the piercing with a test media carried by the tape.

26. The method of claim 25 wherein the bodily fluid translates along a capillary groove in the lancet to contact the test media.

27. The method of claim 23 wherein the lancets are carried on the tape with their sharp tips pointing away from the direction of tape advancement.

28. A method for obtaining a bodily fluid sample comprising:

positioning a first lancet carried by a tape adjacent a bend in a service loop portion of the tape;

relatively translating the service loop portion of the tape to lance tissue with the first lancet.

29. The method of claim 28 wherein the relatively translating includes pivoting a pivoting member.

30. The method of claim 28 further comprising:

after the relatively translating, advancing the tape to positioning a second lancet adjacent the bend in the service loop; and

lancing tissue with the second lancet.

31. A method for obtaining a bodily fluid sample comprising:

providing a tape carrying a plurality of lancets that are non-circular in cross section along a major portion of their lengths; and

lancing tissue with a first lancet by relatively translating a service loop portion of the tape.

32. The method of claim 31 further comprising:

after lancing with the first lancet, advancing the tape; and then

lancing tissue with a second lancet by relatively translating the service loop portion of the tape.

33. The device of claims 1, 8 or 15 further comprising a removable cover over unused ones of the lancets.

34. The device of claims 1, 8 or 15 further comprising a removable cover over unused ones of the lancets wherein the removable cover is in the form of a substantially continuous strip.

35. The device of claims 1, 8 or 15 further comprising a removable cover over unused ones of the lancets and a take up reel for peeling the removable cover from the lancets prior to use.

36. The device of claims 1, 8 or 15 further comprising a removable cover over unused ones of the lancets, a take up reel for peeling the removable cover from the lancets prior to use, and a reapplication reel for replacing the cover over used lancets.

37. The device of claims 1, 8 or 15 wherein the lancets are composed of a hardened stainless steel.

38. The device of claims 1, 8 or 15 wherein the lancets are composed of a shape memory alloy.

39. A multi-use lancing device comprising:

a housing having a lancet opening and containing a supply reel and a storage reel;

an elongated flexible carrying tape configured for reel-to-reel transfer from the supply reel to the storage reel;

a plurality of lancets sequentially positioned along the carrying tape and each having a lancet length and a distal portion defining a sharp tip;

a sterile removable cover over the lancets in the supply reel; and

a take-up reel for removing the cover from the lancets as the lancets are advanced from the supply reel to the storage reel.

40. The device of claim 39 wherein a substantial portion of the lancet length is high-aspect ratio in cross section.

41. The device of claim 39 wherein the lancets are composed of a hardened stainless steel or a shape memory alloy.

42. The device of claim 39 further comprising a cover application reel for placing a cover over the lancets being advanced onto the storage reel.

43. The device of claim 42 wherein the cover removed from the lancets by the take-up reel is placed over the lancets by the cover application reel.

44. The device of claim 39 further comprising a plurality of test media carried on the tape, at least one test media associated with each of the plurality of lancets.

45. The device of claim 39 wherein the lancets include a capillary groove for conveying a bodily fluid sample to an associated test media.

46. A supply of lancets in reel-to-reel fashion comprising:

a supply reel, a storage reel and a carrying tape configured for reel-to-reel transfer from the supply reel to the storage reel;

a first lancet wrapped around the supply reel and flexed into a non-linear orientation;

a second lancet on the carrying tape between the supply and storage reels and in a generally linear orientation; and

a removable cover over at least the first lancet and not over the second lancet.

47. The supply of lancets of claim 46 wherein there are a plurality of first lancets wrapped around the supply reel and flexed into a non-linear orientation.

48. The supply of lancets of claim 47 wherein the lancets are constructed of a hardened stainless steel or shape memory alloy.

49. The supply of lancets of claim 46 wherein the removable cover is in the form of a substantially continuous strip.

50. The supply of lancets of claim 49 wherein the substantially continuous strip has a first portion wrapped around the supply reel and a second portion wrapped around the storage reel.

51. The supply of lancets of claim 46 wherein a substantial portion of the second lancet is substantially planar.

52. The supply of lancets of claim 46 wherein the first and second lancets are integral with the carrying tape.

53. A multi-use device for sampling a bodily fluid comprising:

a housing defining a lancing opening and containing a carrying tape configured to sequentially carry a plurality of lancets from a supply reel containing lancets uncontaminated with the bodily fluid to an activating section of the carrying tape adjacent the lancing opening; and

a removable cover over the lancets on the supply reel;

wherein the lancets each include a distal portion with a sharp tip

wherein a substantial portion of the length of each lancet is non-circular in cross section; and

wherein the lancets are positioned on the carrying tape to have a proximal portion thereof lead the distal portion from the supply reel into the activating section.

54. The multi-use sampling device of claim 53 wherein the lancets are slideably positioned on the tape member.

55. The multi-use device of claim 53 wherein the lancets are integral with the tape.

56. The multi-use device of claim 53 wherein the carrying tape includes at least one test media associated with each of the lancets for detecting at least one property of the bodily fluid obtained by the lancet.

57. The multi-use device of claim 56 wherein the removable cover is over test media in the supply reel to protect the test media from moisture contamination prior to use.

58. A method for obtaining a bodily fluid sample comprising:

providing a reel-to-reel tape carrying a plurality of lancets that are non-circular in cross section along a major portion of their lengths;

removing a sterile cover from a first lancet;

advancing the tape to position the first lancet adjacent a bend in the tape with a sharp tip of the first lancet spaced from the tape;

piercing tissue with the sharp tip of the first lancet; and

after the piercing, advancing the tape to bring the sharp tip of the first lancet closer to the tape.

59. The method of claim 58 further comprising:

after the piercing, positioning a second lancet adjacent the bend in the tape with the sharp tip of the second lancet spaced from the tape; and

piercing tissue with the sharp tip of the second lancet.

60. The method of claim 58 further comprising contacting a bodily fluid produced from the piercing with a test media carried by the tape.

61. The method of claim 60 wherein the bodily fluid translates along a capillary groove in the lancet to contact the test media.

62. The method of claim 58 wherein the lancets are carried on the tape with their sharp tips pointing away from the direction of tape advancement.

63. A method for obtaining a bodily fluid sample comprising:

removing a sterile cover from a first lancet carried by a tape;

positioning the first lancet adjacent a bend in a service loop portion of the tape;

relatively translating the service loop portion of the tape to lance tissue with the first lancet.

64. The method of claim 63 wherein the relatively translating includes pivoting a pivoting member.

65. The method of claim 63 further comprising:

after the relatively translating, advancing the tape to positioning a second lancet adjacent the bend in the service loop; and

lancing tissue with the second lancet.

What is claimed is:

1. A multi-use lancing device for sampling a bodily fluid comprising:

a carrying tape (22) having a length and defining a supply section (34), a storage section (36) and an activating section (32) between the supply and storage sections (36), wherein there is at least one bend (39) in the activating section (32) of the carrying tape (22); and
a plurality of lancets (28) carried along the length of the tape (22), each of the lancets (28) having a proximal portion (30), a distal portion (29), and a lancet length, wherein a substantial portion of the lancet length is non-circular in cross section, and wherein the distal portion includes a sharp tip (31) that is uncontaminated with the bodily fluid when in the supply section (34) of the carrying tape (22);

wherein lancets (28) in the supply section (34) of the carrying tape (22) are in a storage position (28a) relative to the carrying tape (22);
wherein a lancet adjacent the bend in the activating section (32) of the carrying tape is in an activating position relative to the carrying tape, the activating position having the sharp tip extending away from an adjacent surface of the carrying tape (22) for lancing tissue to obtain the bodily fluid sample
characterized in that the lancets are oriented on the carrying tape (22) such that their proximal portions precede their sharp tips (31) as the lancets are carried from the supply section (34) to the activating section (32) by advancement of the tape.

2. The device of claim 1 wherein the currying tape (22) is contained in a housing (40) that defines a lancing opening (42), and wherein the sharp tip (31) of the lancet (28) in the activating position is disposed towards the lancing opening for lancing tissue.

3. The device of claim 2 the supply section (34) of the carrying tape (22) is wrapped around a supply reel (24) and the storage section (36) of the carrying tape is wrapped around a storage reel (26).

4. The device of claim 3 wherein the supply and storage reels (24, 26) are mounted in the housing (40) to rotate about axes (24a, 26a) that are substantially parallel.

5. The device of claim 2 wherein the proximal portions (30) of the lancets (28) are integral with the carrying tape (22).

6. The device of claim 5 wherein the bend (39) in the carrying tape (122) is a portion of a service loop (112, 114, 110) of the carrying tape, and wherein the service loop is translatable relative to at least one of the supply and the storage reel.

7. The device of claim 1 wherein lancets (28) in the storage position (28a) are flexed and lancets in the activation position are generally linear.

8. The device of claim 1 wherein the carrying tape (22) defines a centerline along its length and the lancets (28) are slideably positioned in a slot of the carrying tape that is generally parallel to the centerline of the carrying tape.

9. The device of claim 8 further comprising a biased activator (360) that, when engaged with a lancet in the activating position, is operable to selectively advance and retract the lancet in the slot.

10. The device of claim 1 further comprising a plurality of test media (262) carried on the carrying tape (270), wherein at least one test media is associated with each of the plurality of lancets.

11. The device of claim 10 wherein the test media (262) are under a cover (332, 422) at least while in the supply section.

12. The device of claim 11 wherein at least a portion of the cover (332) is adapted to be pierced by the sharp tip of a lancet (266) in the activating position.

13. The device of claim 1 further comprising a sensor (290) for analyzing the test media (262) through the cover (332) to determine at least one property of the bodily fluid.

14. The device of claim 1 further comprising a sterile cover (332) for protecting the sharp tips (331) of the lancets (328) when the lancets are in the storage position.