

Overview

"This standard describes the design and manufacture, using manual or digital techniques, of functional orthodontic appliances. You need to design and manufacture custom-made dental appliances which are used to correct skeletal and dentoalveolar discrepancies in the developing child or young adult.

In this standard the term 'client' has been used to mean the clinician who has prescribed and specified the functional orthodontic appliance. Clients may be external to the organisation (such as other laboratories, dental practitioners, training schools) or internal (within a dental hospital). The individual is the one for whom the appliance is being made.

Users of this standard will need to ensure that practice reflects up to date information and policies."

Performance criteria

You must be able to:

1. access and accurately interpret all relevant work instructions and information
2. work safely at all times and in accordance with all relevant legislation, guidelines, policies, procedures and protocols
3. deal promptly and effectively with any problems within your control and report those which cannot be solved
4. communicate with relevant others at a pace, manner and level appropriate to their understanding, preferences and needs
5. identify and minimise hazards and risk in the workplace
6. collate all specification information required for the design and manufacture of the functional orthodontic appliances
7. confirm accuracy of the specification with relevant others
8. select the necessary components, materials and equipment and confirm that they are fit for purpose
9. set up the manufacturing equipment in accordance with the specification
10. manufacture the functional orthodontic appliances using appropriate methods and techniques
11. monitor the manufacturing process and adjust as required
12. deinvest or retrieve the manufactured product using an appropriate method which releases the item without causing damage
13. check that the manufactured product matches the specification and make any necessary adjustments
14. check that the finished functional orthodontic appliances match the specification and make any necessary adjustments
15. dispose of waste in accordance with organisational procedures
16. complete and store all relevant documentation in accordance with organisational requirements"

Knowledge and understanding

You need to know and understand:

1. the current legislation, guidelines, policies, procedures and protocols which are relevant to your work practice and to which you must adhere
2. the scope and limitations of your own competence, responsibilities and accountability as it applies to your job role
3. how to access and interpret all relevant work instructions and information
4. specific procedures for reporting issues which are beyond your competence, responsibilities and accountability
5. the duty to report any acts or omissions that could be unsafe/detrimental to you or others
6. how to communicate with relevant others at a pace, manner and level appropriate to their understanding, preferences and needs
7. the hazards and risks which may arise during the execution of your work role and how you can minimise these
8. the correct use of any equipment and PPE to protect the health and safety of you and others
9. the principles and use of digital design and manufacturing
10. relevant digital manufacturing equipment, methods and techniques
11. skeletal anatomy, physiology and tooth morphology necessary for functional orthodontic appliance construction
12. the function and movement of the oral musculature and temporomandibular joint
13. principles of balanced articulation and its effect on the function of functional orthodontic appliances
14. disorders and diseases affecting the oral cavity
15. the aetiology and classifications of malocclusions
16. growth and eruption patterns of both deciduous and permanent teeth
17. the physiological changes related to tooth movement
18. growth and development of maxilla and mandible
19. limitations of growth modifications; restrictions and contraindications to growth modification
20. the broader factors (sociological, behavioural, environmental and economic) that contribute to oral health and illness
21. the aims and objectives of orthodontic treatment
22. key factors in the success of orthodontic treatment, common problems and the

common causes of failure of treatment

23. the stages in, and types of, orthodontic treatment and how they relate to each other

24. principles of design and manufacture of functional orthodontic appliances

25. the scope of orthodontic treatment using functional orthodontic appliances

26. principles of baseplate and interlocking posterior guideplane design and construction

27. the nature and purpose of study casts

28. application and magnitude of the forces used in the movement of teeth and the development of mandibular growth

29. the different types of functional orthodontic appliances and the components that are required

30. the use of casts in the design, manufacture and positioning of components for appliances

31. methods of activation and reactivation of components and functional appliances

32. how appliances are fitted, adjusted and activated

33. methods of modification, repair and maintenance of functional appliances

34. principles and application of myofunctional appliance technology

35. methods of measurement and analysis of cephalometrics, including characteristics, skeletal patterns, facial height and incisor relationships

36. how the curing process affects the choice of materials and manufacturing processes

37. how to identify the size and type of components that will be required

38. the range of pre-formed components that are available and methods to assess their suitability for use in constructing an appliance

39. the different gauges of wire that are used for different types of components

40. methods for identifying which wire is required and suitable

41. methods of straightening and bending wire and the instruments that are used

42. handling tolerances of wires, the effects of over-handling and how to identify when this has happened

43. methods of assessing the suitability of manufactured components

44. the purpose and use of the different types of biteplanes and how these are constructed

45. methods for the application of polymeric, why different techniques are used

46. uses of spot welding and soldering

47. how the duration and level of current affects the strength and viability of the join produced

48. methods of calibrating equipment, how to determine the correct settings for the size and type of materials being welded
49. how to judge when metals have been heated sufficiently to melt solder, but not interfere with the metal's mechanical structure
50. the causes and effect of faults in soldering
51. how to identify reasons for soldered joint failure
52. the different curing methods, how each works, their effect and the situations in which each is best used
53. physical characteristics of materials used in appliances and how the curing processes affect them
54. the different separating media, when and why these are used
55. methods of deflasking
56. the ways in which appliances are cleaned in preparation for finishing and polishing
57. techniques for finishing and polishing appliances
58. the different types of abrasive and polish and their purpose
59. methods for the safe and effective cleaning of appliances of each
60. methods of assessing and checking the safety, aesthetic, functional and clinical acceptability of completed appliances
61. the selection of a suitable articulator for the type of appliance being designed and manufactured
62. centric occlusion records
63. lateral and protrusive movement records and their uses
64. methods of developing, maintaining and improving communication and information relating to the provision of custom-made dental devices
65. methods of protection against contamination and infection control when handling received impressions and other items which may have been in the mouth, or which are intended to be placed in the mouth; why it is important to do so
66. principles of quality assurance including effective recording and sampling; processes and procedures for quality assurance in your workplace
67. methods of setting and calibrating equipment and of testing that this is correct
68. the effects of modifying manufacturers' products to meet laboratory requirements on the physical properties of products and on quality assured products, and the legal implications of poor manufacturing
69. the range of equipment used in the design and manufacture of dental devices
70. methods of using equipment and materials safely including the use of chemicals and other hazardous substances

- 71. methods of storing different equipment and materials safely and securely
- 72. methods of cleaning and maintaining different types of equipment
- 73. how to dispose of waste in accordance with organisational procedures
- 74. how to complete and safely store all relevant documentation in accordance with organisational requirements"

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Design and manufacture functional orthodontic appliances



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