



FDI DRAFT POLICY STATEMENT

CAD/CAM Dentistry

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2 **CONTEXT**

3 Over the last 30 years, technological improvements have benefited each step of the
4 computer-aided design and computer-aided manufacturing (CAD/CAM) process;
5 process, by developing high definition 3D scanning devices, more accurate, faster and
6 simpler design Software, and precise subtractive or additive manufacturing of
7 innovative materials.

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9 CAD/CAM processes concern all branches of dentistry involving custom-made
10 medical devices. Such devices include those fabricated for use in restorative dentistry,
11 prosthetic dentistry, dental implant procedures, and orthodontics, all of which having
12 seen new or improved therapeutic solutions emerging from the use of CAD/CAM
13 technologies. CAD/CAM systems offer an alternative to processing indirect dental
14 restorations and fixed dental prosthesis. The use of digital impressions eliminates a
15 number of clinical and laboratory steps, leading to fast and effective delivery of the
16 final custom made medical device.

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18 Everyday dental practice is, or soon will be, affected by the use of CAD/CAM dentistry.
19 Dentists and laboratory technicians use new tools developed for digital impression,
20 computer-aided design and fabrication with subtractive or additive manufacturing
21 (such as laser sintering and 3D printing including stereolithography), all of which
22 require good practice procedures to ensure the quality of the final product.

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24 Research and development in innovative machinable ceramics, resins and hybrid
25 materials bring to the market new therapeutic indications and procedures, as well as
26 risks and dangers, that dentists must be informed about by manufacturers. Dentists
27 should also report back to manufacturers and relevant health agency any unwanted
28 event or effect related to the practice of CAD/CAM dentistry, as this will help
29 manufacturers improve the technology and prevent recurrent adverse effects.

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31 The development of open systems requires international standards to ensure
32 interoperability within the process; between digitizing devices, CAD software products,
33 and the numerical control machine tool. New types of ceramic, resin and hybrid
34 products require fast development of standards for safety and quality of the final
35 product.

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37 Reducing time and human resources needed to produce CAD/CAM medical devices,
38 together with the development of the market, lead to cost reduction in custom-made
39 medical devices. Furthermore, reducing materials used for impression and casting,
40 along with electronic transmission instead of transport, also have a positive impact on
41 the environment.

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43 **DEFINITIONS**

44 **CAD/CAM dentistry**

45 process of designing and manufacturing a custom-made dental device, or a patient-
46 specific dental device from an industrialized product, with the aid of a computer.

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48 **POLICY**

49 FDI supports:

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51 • The research and development of CAD/CAM dentistry to improve the quality of
52 the final product and allow for cost reduction.

53 • A strong collaboration between manufacturers, academics and all stakeholders
54 in continuous education, to better inform and educate dentists on innovative
55 therapeutic solutions, their indications and contra-indications.

56 • The development of open systems and international standards by ISO TC106
57 to ensure interoperability between dental CAD/CAM systems.

58 • The development of international standards by ISO TC106 for ceramics and
59 hybrid materials used in CAD/CAM dentistry systems.

60 • The implementation of initial formation and continuous professional
61 development on CAD/CAM dentistry, for dentists and laboratory technicians, at
62 the national, regional and international level.

63 • The development of users networks at a local level to mutualize the weight of
64 equipment investments.

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66 **KEYWORDS**

67 Dental education, clinical practice, professional training, dental laboratory, medical
68 device, dental products, dental implants, dental material, standards, technology.

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70 **DISCLAIMER**

71 The information in this Policy Statement was based on the best scientific evidence
72 available at the time. It may be interpreted to reflect prevailing cultural sensitivities
73 and socio-economic constraints.