Seminar: synthesis and exam preparation

Research methods, evidence, ethics, well-being and communication in dental practice — classes 8 to 14 as one picture

Practical Class 15 · Social Medicine with Medical Ethics · Dental Medicine (English) · 2026/2027

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What this seminar is for

1. Connect the seven classes of the second part into one picture of evidence-based, ethical and patient-centred dental practice.
2. Revise the key concepts, definitions, numbers and legal provisions of each class.
3. Apply them together to integrative dental cases, with model answers.
4. Understand the structure and scoring of the semester examination.
5. Practise short answers and single-best-answer questions.

How the seminar is organised

1. The examination and how to answer.
2. Key concepts, class by class (8 $\longrightarrow$ 14).
3. Connections across the topics.
4. Three integrative cases with model answers.
5. Practice questions and a revision plan.

Resources: 15-minute reading · practice tasks. Practice questions are written for revision; they are not examination items.

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1. **The semester examination**
2. Key concepts, class by class
3. Connections across the topics
4. Integrative cases with model answers
5. Practice: open questions
6. Practice: multiple-choice questions
7. Revision

Structure of the final SMME examination

Part	Format	Scoring	Maximum
Bioethics	10 open questions, short text answer	3.5 points each	35
Bioethics	15 multiple-choice questions, one correct answer	1 point each	15
Biostatistics	10 open questions, short text answer	3.5 points each	35
Biostatistics	15 multiple-choice questions, one correct answer	1 point each	15
Total	**75 minutes** for the whole test		**100**

Open questions

A correct and complete answer, **within 5–6 sentences**, earns the maximum of 3.5 points. A correct but incomplete answer earns 1 point.

SMME exam structure and students' assessment standard, Dental Medicine, 2nd year; Department meeting protocol No. 24/24.09.2026

Grading scale and ongoing control

Points	Grade
≤ 60	Fail (2)
61–70	Average (3)
71–80	Good (4)
81–90	Very good (5)
91–100	Excellent (6)

Social medicine assignments

Two individual assignments: "Scientific writing" (critical evaluation of a scientific publication) and "Communicative skills of the dental practitioner". The highest-rated assignments receive a combined maximum of **5 points**, added to the examination points. Your teacher confirms how each assignment is organised in your group.

Biostatistics case studies

Up to **5 extra points** from five in-class case studies; valid only for the regular examination session.

A summary of the ongoing-control results is published two weeks after the end of the bioethics course. The Bioethics part covers the course as taught in lectures and practicals; this seminar synthesises practical classes 8–14.

SMME exam structure and students' assessment standard, Dental Medicine

How to write a full-mark short answer

A five-to-six sentence pattern

1. **Define** the concept precisely.
2. **Explain** its elements or how it works.
3. **Give a dental example.**
4. **State a limit, a distinction or a legal rule** where relevant.
5. **Conclude** with why it matters in practice.

Why answers lose points

Only a definition (correct but incomplete: 1 point). A list without explanation. A confusion of related terms (bias and confounding; prevalence and incidence; burnout and depression; empathy and reassurance). Long text that never answers the question asked.

Multiple-choice technique: read the stem twice and underline the key word ("most", "first", "not"); answer in your head before reading the options; eliminate options that are true but do not answer the question; watch for absolute words ("always", "never").

Time: 75 minutes for 50 questions across both subjects — for example about 2.5 minutes per open question ($20 \times 2.5 = 50$ min), 40 seconds per MCQ (30×40 s $= 20$ min) and 5 minutes to check.

Answer the question asked, use the technical term, and add one dental example. Completeness, not length, earns the 3.5 points.

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Class 8 · Scientific research and the research question

- **Research** is a systematic, planned inquiry that produces generalisable knowledge by a method that others can check and repeat.
- Four independent axes classify it: **purpose** (basic, applied), **domain** (clinical, public health, health services), **approach** (quantitative, qualitative, mixed), **control and time** (observational vs experimental; cross-sectional vs longitudinal; prospective vs retrospective).
- A good question is **FINER**: feasible, interesting, novel, ethical, relevant.

Structuring the question

PICO (intervention questions) or **PECO** (exposure questions): population, intervention/exposure, comparison, outcome.
Example: in 12-year-old schoolchildren (P), does supervised fluoride varnish twice a year (I), compared with no varnish (C), reduce the caries increment over three years (O)?

From the question follow the **aim**, specific **objectives** and, for analytical studies, a testable **hypothesis**.

Class 8 deck "Research methodology" and reading

Class 8 · Which design answers which question?

Design	Starts from…	Answers	Typical measure
Cross-sectional	A population at one point in time	How common is it? (prevalence, burden)	Prevalence, prevalence ratio
Case–control	People with and without the disease	What exposures are associated with a (rare) disease?	Odds ratio
Cohort	People with and without the exposure, followed forward	What is the incidence and the risk associated with the exposure?	Incidence, relative risk
Randomised controlled trial	Participants randomly allocated to interventions	Does the intervention work?	Risk difference, relative risk, NNT
Systematic review / meta-analysis	All studies on a focused question	What does the whole body of evidence show?	Pooled estimate, heterogeneity (I^2)
Qualitative study	People's experiences and meanings	Why and how? (e.g. why anxious patients avoid care)	Themes, not numbers

Observational designs can show **association**; randomisation balances known and unknown prognostic factors in expectation, so a trial can estimate an **effect**. Case–control is efficient for rare outcomes such as oropharyngeal cancer; cohort studies for rare exposures.

Class 8 deck, design tree and examples

Class 8 · The protocol: sample, validity and ethics

Sample size for a prevalence

$n = Z^2 \cdot p(1 - p) / d^2$. Worked example: $p = 0.60$, $d = 0.05$, $Z = 1.96 \longrightarrow 369$; × design effect 2 for cluster sampling $\longrightarrow 738$; ÷ 0.90 for 10% non-response $\longrightarrow$ **820 pupils**. With an unknown p, 0.50 gives the largest n (≈ 385).

Chance (random error) is reduced by sample size; **bias** (selection, information/recall) is prevented by design and is not removed by a larger sample; **confounding** is a common cause of exposure and outcome, controlled by randomisation, restriction, matching, stratification or multivariable models. Examiners are calibrated; agreement is reported as Cohen's kappa. Reliability is not validity.

Ethics is part of the method

Written informed consent after written information (Health Act, Art. 199(1)); a positive opinion of an ethics committee before the study (Art. 203(1)); the participant's interests prevail over scientific and financial interests (Art. 197(5)); consent may be withdrawn at any time (Art. 199(3)).

Vipeholm, Sweden, 1945–1953: residents of an institution for people with intellectual disabilities were fed sticky sweets to study caries; the findings shaped prevention, but the participants never consented.

Class 8 deck · Health Act, Arts 197–205

Class 9 · Reviews and the evidence they produce

- **Narrative review**: broad, expert-led, methods not explicit.
- **Scoping review**: maps a field and its concepts; does not usually appraise or pool.
- **Systematic review**: focused question, protocol, comprehensive search, explicit selection, risk-of-bias appraisal, synthesis; reported with **PRISMA 2020**.
- **Meta-analysis**: statistical pooling within a systematic review; read the forest plot (each study's estimate and CI, the pooled diamond, heterogeneity I^2).

A dental example: fluoride varnish (Marinho et al., Cochrane 2013)

22 trials, 12,455 children. Prevented fraction in permanent teeth **43%** (95% CI 30–57%; 13 trials; I^2 = 75%), in primary teeth **37%** (24–51%; 10 trials); moderate certainty. The prevented fraction is a reduction in the **mean caries increment**, not in the proportion of children who develop caries.

The evidence pyramid is a heuristic, not a rigid ranking: a well-conducted cohort study can be more trustworthy than a flawed trial.

Class 9 deck · Marinho et al., 2013, doi:10.1002/14651858.CD002279.pub2

Class 9 · Searching and appraising

Searching

- Turn PECO into concept blocks; within a block combine synonyms and MeSH terms with **OR**; combine blocks with **AND**; use NOT sparingly.
- **MeSH** searches for concepts, not words; add free text for new terms.
- Sources: PubMed/MEDLINE, Cochrane, Scopus, Web of Science, Dentistry & Oral Sciences Source (remote access via the MU-Plovdiv library).
- Document the date, the string and the number of hits; use a reference manager.

Reporting guideline (what authors should report)	**Appraisal tool (how trustworthy)**
CONSORT — trials	RoB 2, CASP — trials
STROBE — observational	ROBINS-I/E, JBI, CASP
PRISMA 2020 — systematic reviews	AMSTAR 2 — reviews
STARD — diagnostic accuracy; COREQ/ SRQR — qualitative	GRADE — certainty of a body of evidence

Association is not effect: periodontitis is associated with preterm birth, but treatment in pregnancy did not reduce preterm birth in the OPT trial — which does not prove periodontitis has no causal role. **Predatory journals** prioritise self-interest over scholarship; check before you cite or submit (Think. Check. Submit.).

Class 9 deck · Grudniewicz et al., 2019, doi:10.1038/d41586-019-03759-y

Class 10 · Morality, ethics, law and deontology

- **Morality**: the beliefs, rules and values by which a group judges conduct; learned through family, culture and religion.
- **Ethics**: systematic, critical reflection on morality — which norms are justified and why. Levels: descriptive, normative, applied, metaethics.
- **Law**: enforceable rules adopted by the state; legal and ethical are related but not identical — something lawful may be unethical and vice versa.
- **Deontology** has two meanings: the ethical theory of duty (Kant) and the body of professional duties (the dental code).

Four ethical theories

Consequentialism: judge acts by outcomes.
Deontology: duties, rights, dignity; persons never merely as means.
Virtue ethics: what would a good dentist (honest, prudent, compassionate) do?
Ethics of care: relationships, vulnerability, attention to particular needs.

Medical ethics is normative and applied: it must end in a justified decision.

Class 10 deck "Ethical principles"

Principlism (Beauchamp and Childress)

Respect for autonomy, beneficence, non-maleficence, justice — **prima facie** principles, binding unless they conflict with an equal or stronger obligation; not ranked in advance. **Specification** narrows a principle for a context; **balancing** decides which weighs more here, with the infringement necessary, minimal and openly justified.

Methods: eight steps (facts → ethical question → stakeholders → principles → options → weighing → decision and justification → communication and review) or the **four-box method** (medical indications, patient preferences, quality of life, contextual features).

Source	Key provisions for dentists
Health Act	Patient rights (Art. 86); consent (87); information (88); written form (89); refusal (90); duty to inform and right not to know (92); research (197–205).
Dental code	Dignity and non-discrimination (11); safety above loyalty (12); emergency duty (13); information, costs, written consent, complaints, no unnecessary treatment (15); honest promotion (10, 16); colleagues (17–18); records (25).
Self-regulation	The Bulgarian Dental Association enforces the code; breaches can lead to sanctions.

Class 10 deck · Health Act · Code of Professional Ethics of Dentists

Class 11 · Stress and burnout

- **Stressor ≠ stress response ≠ long-term outcome.** Dental stressors operate at individual, team, organisational and system levels; students face additional academic demands.
- **Job demands–resources model**: demands (workload, emotional labour, interruptions) consume effort; resources (autonomy, feedback, assistance, fair climate) help meet them. An explanatory model, not an equation.
- **ICD-11 QD85**: burn-out is an **occupational phenomenon**, not a medical condition — exhaustion; mental distance or cynicism; reduced professional efficacy.
- **Maslach**: emotional exhaustion, depersonalisation/cynicism, reduced personal accomplishment.

Measurement and prevalence

MBI measures dimensions on scales — not a diagnosis; CBI and BAT use other conceptions. Dentists: **13%** (95% CI 6–23%; 15 studies, 6,038 participants; Long et al., 2023). Dental students: **26.5%** (16.9–36.0%; 12 studies, 8,141 students; I^2 = 98.2%; Mak et al., 2026). Different populations and definitions — not a career trajectory.

Prevention at individual, team, organisational and professional-system levels; the intervention evidence supports cautious conclusions. A colleague in difficulty needs concern, evidence and a safe pathway.

Class 11 deck · Long et al., 2023, doi:10.1080/13548506.2023.2208364 · Mak et al., 2026, doi:10.1186/s12909-026-08891-8 · Demerouti et al., 2001, doi:10.1037/0021-9010.86.3.499

Class 12 · Communication: theory and relationship models

- **Communication**: sharing meaning; it succeeds when the intended understanding arrives. Process: sender → message → channel → receiver → feedback, with **noise**. What is meant may not be said, heard, understood or done.
- Channels: **verbal**, **paraverbal** (tone, pace), **non-verbal** (posture, eye contact, touch, proxemics — the dentist works in the intimate zone, 15–45 cm). The "7–38–55" figures come from experiments on inconsistent messages about feelings and do not apply to communication in general.
- Barriers: physical, physiological, psychological, semantic, personal skills, organisational and cultural.

Model	Core idea
Szasz & Hollender (1956)	Activity–passivity, guidance–cooperation, mutual participation — each fits a clinical state.
Emanuel & Emanuel (1992)	Paternalistic, informative, interpretive, deliberative.
Partnership (Yolov)	Both autonomous; consensus through exchange and negotiation.
Patient-centred care	From "What is the matter?" to "What matters to you?"

A firm recommendation is not paternalism; paternalism overrides a capable person's choice for their supposed good.

Class 12 deck · Cooper & Frain (eds), 2018 · Yolov & Yaneva (eds), 2011, pp. 62–64, 91–94

Class 12 · The consultation and its techniques

Concept	Key content
Calgary–Cambridge	Five tasks — initiating, gathering information, physical examination, explanation and planning, closing — and two threads: providing structure, building the relationship.
Opening	Let the patient finish: physicians interrupted after a mean of 23 s (1999) and a median of 11 s (2019); uninterrupted patients needed only about 6 s more.
ICE	Ideas, concerns, expectations — the patient's perspective (from Pendleton).
Chunk and check; teach-back	Small blocks of information, checked; the patient restates in their own words (20 studies, improved outcomes in 19).
Safety-netting	What is normal, what is not, whom to call (from Neighbour).
NURSE	Name, understand, respect, support, explore — emotion before information.
BATHE	Background, affect, trouble, handling, empathy — a brief psychosocial check.
Motivational interviewing	Client-centred, directive method to resolve ambivalence; OARS; change talk; avoid the righting reflex; stages of change; SMART goals.
Shared decision-making	Choice talk, option talk, decision talk; decision aids improve knowledge and risk perception (105 trials).
Risk communication	Natural frequencies and absolute risks; relative risk reductions seem larger and persuade more.

Class 12 deck · Marvel et al., 1999 · Singh Ospina et al., 2019 · Talevski et al., 2020 · Stacey et al., 2017 · Akl et al., 2011

Class 12 · Consent, health literacy and special groups

- **Consent** (Health Act): content of information (Art. 88), written for surgical and higher-risk methods (89), refusal documented and revocable (90), right not to be informed (92(2)–(4)); minors: under 14 parent; 14–17 both; from 16 no parental consent for specified preventive care (87). Dental code: options and costs, written consent for complex or expensive treatment (15).
- **Health literacy**: capacity to obtain, process and understand health information to make decisions; functional, interactive, critical. HLS-EU: **47.6%** limited overall; **62.1% in Bulgaria**. Use plain language and teach-back with everyone.
- **Dental anxiety**: adults 15.3% (high 12.4%, severe 3.3%); children 23.9%; MDAS 5–25, ≥ 19 high; four types of dental phobia; CBT strongest evidence; tell–show–do for children.
- **Adolescents**: time alone, confidentiality and its limits, HEADSSS.
- **Older people, dementia, disability**: sensory aids, carers with consent, adapted formats.
- **Language barriers**: professional interpreters, never children; teach-back through the interpreter.
- **Culture**: avoid the cultural blind spot; describe behaviour, do not label patients.

Class 12 deck · Health Act, Arts 87–92 · Sørensen et al., 2015, doi:10.1093/eurpub/ckv043 · Silveira et al., 2021 · Grisolia et al., 2021

Classes 12–13 · Difficult situations and the team

Situation	Key approach
Anger and aggression	Safety first; private space; acknowledge before explaining; set limits; concrete way forward; record and fix the cause (code, Arts 11(3), 13).
Complaints	Listen, apologise for the experience, establish facts, distinguish expected effect, complication and error; make every reasonable effort to resolve it on the spot (code, Art. 15(4)).
Bad news	SPIKES — setting, perception, invitation, knowledge, emotions, strategy and summary; silence allowed; never a diagnosis before it exists.
Errors	Patients want to know what happened, why, how consequences will be mitigated and recurrence prevented, and an apology (Gallagher et al., 2003); safety above loyalty (code, Art. 12).
Withheld information	Normalise, explain the rationale, specific questions, thank for disclosure, set an alert.
Team	State the obvious, avoid problematic pronouns, readback; PACE for speaking up; SBARR handover; time-out before extraction; WHO checklist (complications 11% $\longrightarrow$ 7%).
Records	Accurate, contemporaneous, signed; corrections visible; what was explained; confidentiality and minimum necessary sharing.

Classes 12–13 decks · Cooper & Frain, chs 5–9 · Haynes et al., 2009, doi:10.1056/NEJMsa0810119

Class 14 · Analysing communication and reflecting

- **Levels**: description → analysis (mechanism) → evaluation (principles, evidence, law) → alternative → reflection.
- **Six lenses**: consultation process; relationship; patient perspective and emotion; information and health literacy; law and ethics; team and system.
- **Mechanism chain**: behaviour → perception → reaction → consequence; each link is a point to intervene.

Reflection

Gibbs (1988): description, feelings, evaluation, analysis, conclusion, action plan. **Driscoll**: What? So what? Now what? **Schön**: reflection-in-action and reflection-on-action. Reflective capacity is seen as part of professional competence; the evidence for teaching it is largely theoretical (Mann et al., 2009).

The assignment: option 1 (analysis of a situation) or option 2 (educational dialogue); up to 2 pages; criteria structure and logic, originality, depth of analysis/reflection — 1 + 1 + 1 = 3 points.

Class 14 deck · Mann et al., 2009, doi:10.1007/s10459-007-9090-2

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One profession, seven lenses

Theme	Evidence (8–9)	Ethics and law (10)	People (11–14)
Consent	Research consent and ethics committee (Arts 199, 203).	Autonomy; information, written form, refusal (Arts 87–90).	The consent **conversation**: chunking, risk in natural frequencies, teach-back.
Numbers	Prevalence, CI, heterogeneity; association vs effect.	Honest disclosure of risk and uncertainty.	Patients understand natural frequencies and absolute risks better.
Bias	Selection, information, confounding.	Conflicts of interest; commercial pressure (code 15(5), 16).	The clinician's own bias in presenting options; labelling patients.
Systems	Calibration, protocols, reporting guidelines.	Safety above loyalty (code 12).	Burnout as a work-system problem; team communication; checklists.
Vulnerability	Research on people who cannot consent (Art. 200; Vipeholm).	Justice; weak paternalism.	Children, older people, low health literacy, language barriers.

In the dental chair, evidence, ethics and communication are not separate subjects: they are the same decision seen from three sides.

Pairs that are often confused

Pair	The distinction
Bias vs confounding	Bias is systematic error in selection or measurement; confounding is a real third factor linked to exposure and outcome.
Prevalence vs incidence	Existing cases at a time vs new cases over a period in people at risk.
Reporting guideline vs appraisal tool	What authors should report (CONSORT) vs how trustworthy the result is (RoB 2).
Ethics vs law	Justified norms vs enforceable rules; lawful is not always ethical.
Paternalism vs recommendation	Overriding a capable person's choice vs advising with reasons while the patient decides.
Burnout vs depression	An occupational phenomenon (QD85) vs a mental disorder needing clinical assessment.
Empathy vs reassurance	Understanding and showing it vs "Don't worry" that closes the conversation.
Refusal vs not wanting to know	Declining treatment (Art. 90) vs declining information (Art. 92(2)).
Complication vs error	An adverse clinical development, which may occur with or without an error, vs a failure in planning or execution of care; say which applies.
Relative vs absolute risk	"Halves the risk" vs "from 2 in 100 to 1 in 100".

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Integrative case 1 · The clinic that loses anxious patients

Case

A dental clinic notices that many new patients with dental anxiety do not return after the first visit. The manager wants "a study". Staff report exhaustion from overrunning sessions. One patient has complained online that she was "rushed and not told anything" before an extraction.

Question	Model answer
1. Formulate a research question and a design.	PECO: new adult patients (P) with high anxiety, MDAS ≥ 19 (E), vs lower anxiety (C), return within six months (O). A prospective cohort of new patients with MDAS at baseline; analyse return with relative risk; adjust for confounders such as age and treatment need.
2. What would you search for first, and how?	Existing evidence on dental anxiety and attendance: PubMed, MeSH "Dental Anxiety" OR anxiety terms AND attendance/"Patient Compliance"; prefer a systematic review; appraise with AMSTAR 2.
3. Which ethical and legal issues arise?	Consent and ethics committee for the study (Arts 199, 203); confidentiality of records; honest response to the complaint (code 15(4)); no pressure to sell treatment (15(5)).
4. How does class 11 help?	Overruns are a demand; protected time, realistic scheduling and assistance are resources (JD-R); exhausted staff communicate worse.
5. What should change in communication?	Ask about anxiety at booking; first visit without invasive treatment where possible; stop signal; chunk and check; written information; teach-back; a safety-net call after extractions.

Integrative case 2 · An implant, a statistic and a refusal

Case

A 62-year-old smoker with diabetes is offered an implant. He read online that "smoking doubles the risk of implant failure" and asks whether he should refuse. He has low health literacy and comes with his son, who answers for him.

Question	Model answer
1. What does "doubles the risk" mean?	It is a relative risk; the decision needs the absolute risks — for example, if failure is 2 in 100 in non-smokers, doubling means about 4 in 100 (use real figures from current evidence). Natural frequencies and an icon array help.
2. What kind of evidence supports such claims?	Mostly observational (cohort, case–control) studies and their meta-analyses; association, possibly confounded (e.g. by periodontal history); a trial randomising smoking is impossible.
3. How do you involve him rather than his son?	Address him directly; ask whom he wants involved; offer time alone; plain language, models, teach-back; the son supports but does not decide for a capable adult.
4. What does the law require?	Information on diagnosis, options (bridge, denture, no treatment), risks and consequences of refusal (Art. 88); written consent for the surgical procedure (Art. 89); a refusal is documented and can be withdrawn (Art. 90).
5. How would you support quitting smoking?	Motivational interviewing: ask permission, elicit his reasons (keeping the implant), importance and confidence rulers, a SMART goal, referral to cessation support; respect his choice.

Integrative case 3 · A tired associate and a near miss

Case

An associate dentist working 11-hour days almost extracts the wrong tooth; the assistant noticed but hesitated to speak. The patient overheard the confusion and asks: "What happened?"

Question	Model answer
1. What should be said to the patient?	The truth in plain words: a mix-up was noticed before any harm; an apology; what is being done for her now and to prevent recurrence (Gallagher et al., 2003); patient safety above loyalty (code 12).
2. Which team-communication tools apply?	A time-out before extraction (patient, tooth number checked against radiograph and referral, consent, allergies); readback; PACE so the assistant can speak up.
3. How does burnout theory explain the event?	Long hours as a demand without recovery; exhaustion impairs attention; individual blame alone does not prevent recurrence — the organisation must change workload and systems.
4. How would you study wrong-site events in clinics?	A cross-sectional survey or audit of incident reports; a qualitative study of why assistants do not speak up; ethics approval and confidentiality of reports.
5. What should the associate do personally?	Reflect (Gibbs or Driscoll), report the near miss, discuss workload with the employer, seek support; a colleague who notices should respond with concern and a safe pathway.

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Open question 1

Question

Explain the difference between bias and confounding. Give a dental example of each.

Model answer (5–6 sentences)

Bias is a systematic error in the design, conduct or analysis of a study that leads to a result that differs from the truth, for example selection bias or information (recall) bias. **Confounding** occurs when a third factor is associated with both the exposure and the outcome and distorts the observed association. In a survey of oral HPV, recall bias would arise if cases of oropharyngeal cancer remembered their sexual history differently from controls. In observational studies of periodontitis and preterm birth, smoking and socioeconomic position can confound the association. Bias is prevented mainly by design; confounding can also be controlled by randomisation, restriction, matching or adjustment in the analysis. Unlike chance, neither is reduced simply by increasing the sample size.

Open question 2

Question

What is the difference between a reporting guideline and a critical-appraisal tool? Give one example of each for a randomised trial.

Model answer (5–6 sentences)

A **reporting guideline** is a checklist of what authors should report so that readers can understand and judge a study. A **critical-appraisal tool** is used by the reader to judge how trustworthy the results are, mainly through the risk of bias. For a randomised trial the reporting guideline is CONSORT, and appraisal tools include the Cochrane RoB 2 tool or the CASP checklist for trials. A well-reported trial can still have a high risk of bias, for example if allocation was not concealed. Reporting therefore makes appraisal possible but does not replace it. In a systematic review, appraisal results feed into the certainty of evidence (GRADE).

Open question 3

Question

Explain the principle of respect for autonomy and how it applies to informed consent in dental practice.

Model answer (5–6 sentences)

Respect for autonomy is the duty to respect the right of a capable person to make decisions about their own body and treatment according to their values. It requires disclosure of information, understanding, voluntariness, capacity and an actual decision. In Bulgaria, the Health Act requires informed consent for medical activities (Art. 87) and information about diagnosis, the nature of treatment, reasonable alternatives, risks and the consequences of refusal (Art. 88). For surgical and other higher-risk interventions, such as implant placement, information and consent must be in writing (Art. 89), and the dental code requires information on alternatives and approximate costs (Art. 15). Autonomy does not oblige a dentist to provide unnecessary or harmful treatment on request (code, Art. 15(5)). A signature documents consent; the conversation is what makes it informed.

Open question 4

Question

How does the WHO describe burn-out in ICD-11, and why is a questionnaire score not a diagnosis?

Model answer (5–6 sentences)

In ICD-11 (QD85) burn-out is described as a syndrome resulting from chronic workplace stress that has not been successfully managed. It has three dimensions: exhaustion, increased mental distance from or cynicism about one's job, and reduced professional efficacy. The WHO classifies it as an occupational phenomenon, not as a medical condition, and it applies specifically to the occupational context. Instruments such as the MBI or the CBI measure dimensions on scales; their cut-offs are not diagnostic boundaries, and the MBI authors discourage such use. Symptoms may also reflect depression, anxiety or physical illness, which require clinical assessment. A score can therefore support research or a conversation, but not a diagnosis.

Open question 5

Question

What is teach-back, and why is it better than asking "Do you understand?". Give a dental example.

Model answer (5–6 sentences)

Teach-back is a technique in which the clinician asks the patient to explain, in their own words, what they have been told, and then corrects any gaps. It checks the clinician's explanation rather than testing the patient. "Do you understand?" is a closed question that patients usually answer "yes", even when they have not understood. After an extraction, the dentist might say: "So that I know I explained it clearly, what will you avoid today and why?" A systematic review of 20 studies found that teach-back improved outcomes in 19 of them. Combined with written instructions, it could have prevented the misunderstanding in the course case of post-extraction smoking.

Open question 6

Question

A capable adult patient refuses an extraction you recommend. How should you communicate, and what does Bulgarian law require?

Model answer (5–6 sentences)

First explore the reasons for refusal, such as fear, cost, mistrust or misinformation, and respond to any emotion with empathy. Explain the likely consequences of not treating and the available alternatives, as the Health Act requires (Art. 88(1)). A capable patient may refuse proposed care at any time, including during treatment (Art. 90(1)). The refusal is certified in the medical records with the patient's signature, or, if the patient cannot or will not sign, with the signatures of the dentist and a witness (Art. 90(2)–(3)). The patient may withdraw the refusal later (Art. 90(5)), so the dentist should keep the door open and offer follow-up. Pressure or threats are not acceptable and undermine trust.

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Multiple choice: questions 1–4 (one best answer)

1. With limited time and resources, which design is most practical for studying the association between oral HPV-16 and a rare cancer such as oropharyngeal cancer?
A. Randomised trial · B. Prospective cohort · C. Case–control study · D. Ecological study

2. The measure of association typically estimated in a case–control study is:
A. Incidence rate · B. Odds ratio · C. Prevalence · D. Number needed to treat

3. Which tool appraises the methodological quality of a systematic review?
A. CONSORT · B. STROBE · C. AMSTAR 2 · D. MeSH

4. In a PubMed search, synonyms for the same concept are combined with:
A. AND · B. OR · C. NOT · D. quotation marks only

Answers: 1 — C · 2 — B · 3 — C · 4 — B. For each, say why the other options are wrong.

Multiple choice: questions 5–8

5. Under the Health Act, written information and consent are required for:
A. every dental examination · B. surgical interventions and other higher-risk methods · C. only general anaesthesia · D. only treatment of minors

6. According to the dental code, a dentist told by a patient that a complaint will be filed must:
A. refer the matter to a lawyer · B. make every reasonable effort to resolve the problem on the spot · C. stop all treatment · D. notify the regional health inspectorate

7. Which of the four principles is most directly at stake when a dentist recommends crowns on healthy teeth to meet a sales target?
A. Justice · B. Non-maleficence · C. Respect for autonomy only · D. Fidelity to the employer

8. The WHO classifies burn-out (QD85) as:
A. a mental disorder · B. an occupational phenomenon · C. a form of depression · D. a personality trait

Answers: 5 — B (Art. 89(1)) · 6 — B (Art. 15(4)) · 7 — B (with beneficence; code Art. 15(5)) · 8 — B.

Multiple choice: questions 9–12

9. In the NURSE mnemonic, the letter R stands for:
A. Reassuring · B. Respecting · C. Referring · D. Repeating

10. For a patient with limited command of the language, informed consent is best obtained with:
A. the patient's 11-year-old child interpreting · B. a professional interpreter · C. a form in Bulgarian and a signature · D. louder, slower speech

11. The first step of SPIKES is:
A. Summarising · B. Setting up the interview · C. Strategy · D. Silence

12. In a 6-year-old patient, informed consent for a filling under Bulgarian law is given by:
A. the child alone · B. the child and the dentist · C. a parent or guardian · D. no consent is needed for fillings

Answers: 9 — B · 10 — B · 11 — B · 12 — C (Health Act, Art. 87(4); the child is still informed and asked to cooperate).

CONTENTS

1. The semester examination
2. Key concepts, class by class
3. Connections across the topics
4. Integrative cases with model answers
5. Practice: open questions
6. Practice: multiple-choice questions
7. **Revision**

A revision plan for the Bioethics part

Step	Action
1. Map	For each class 8–14, write the five key terms and one dental example from memory, then check against the deck and the 15-minute reading.
2. Practise	Use the five tasks on each class's learning-tasks page; write the open answers by hand in 5–6 sentences, with a timer.
3. Connect	Link law and code articles to cases: consent (87–89), refusal (90), information (88, 92), research (199, 203), code Arts 11, 12, 15, 25.
4. Distinguish	Use the list of confused pairs: bias/confounding, reporting/appraisal, ethics/law, burnout/depression, empathy/reassurance, relative/absolute risk.
5. Simulate	Time yourself: the whole test is 75 minutes for 50 questions across both subjects.

Discussion and closing

1. Which concept from classes 8–14 changed the way you think about a dental consultation?
2. Choose one integrative case and add a lens that the model answer did not use.
3. Which pair of concepts do you still find hardest to distinguish?

What remains for you

Revise with the readings and tasks; complete the assignments and use the feedback; bring questions to the consultation hours announced by the department.

Evidence, ethics and communication are not separate subjects. In the dental chair, they are the same decision.

Sources

- Department of Social Medicine and Public Health, MU-Plovdiv. SMME exam structure and students' assessment standard (Dental Medicine, 2nd year); Departmental meeting protocol No. 24/24.09.2026. Independent task "Communication skills of the dentist".
- Decks and readings of practical classes 8–14 (2026/2027), with their full source lists.
- Cooper N, Frain J (eds). **ABC of Clinical Communication**. Wiley Blackwell, 2018. · Yolov Ts, Yaneva K (eds). **Social medicine, medical ethics and dental public health** (in Bulgarian). Simelpress, 2011.
- Health Act, Arts 86–92, 197–205 (consolidated text, 2026). Code of Professional Ethics of Dentists (State Gazette 34/2006, amended 18/2017).
- Marinho VCC et al. Fluoride varnishes. Cochrane 2013. doi:10.1002/14651858.CD002279.pub2 · Grudniewicz A et al. Predatory journals. Nature 2019. doi:10.1038/d41586-019-03759-y
- Long et al. Burnout among dentists. Psychol Health Med 2023. doi:10.1080/13548506.2023.2208364 · Mak et al. Burnout among dental students. BMC Med Educ 2026. doi:10.1186/s12909-026-08891-8 · Demerouti E et al. J Appl Psychol 2001. doi:10.1037/0021-9010.86.3.499
- Marvel MK et al. JAMA 1999. doi:10.1001/jama.281.3.283 · Singh Ospina N et al. J Gen Intern Med 2019. doi:10.1007/s11606-018-4540-5 · Talevski J et al. PLoS One 2020. doi:10.1371/journal.pone.0231350
- Stacey D et al. Cochrane 2017. doi:10.1002/14651858.CD001431.pub5 · Akl EA et al. Cochrane 2011. doi:10.1002/14651858.CD006776.pub2 · Sørensen K et al. Eur J Public Health 2015. doi:10.1093/eurpub/ckv043
- Silveira ER et al. J Dent 2021. doi:10.1016/j.jdent.2021.103632 · Grisolia BM et al. Int J Paediatr Dent 2021. doi:10.1111/ipd.12712 · Gallagher TH et al. JAMA 2003. doi:10.1001/jama.289.8.1001 · Haynes AB et al. N Engl J Med 2009. doi:10.1056/NEJMsa0810119
- Back AL et al. NURSE. CA Cancer J Clin 2005. doi:10.3322/canjclin.55.3.164 · Baile WF et al. SPIKES. Oncologist 2000. doi:10.1634/theoncologist.5-4-302 · Mann K et al. Adv Health Sci Educ 2009. doi:10.1007/s10459-007-9090-2

Good luck in the examination!