Guidelines Breast
Version 2024.1D

Diagnostik und Therapie früher und fortgeschrittener Mammakarzinome

Supportive Therapie und Nebenwirkungsmanagement

Screened data bases
Pubmed 2007 - 2023, ASCO 2010 – 2023, SABCS 2010 – 2023, Cochrane Data Base (2023)

Screened guidelines

1. Cardoso F, Paluch-Shimon S, Senkus E, et. al. 5th ESO-ESMO international consensus guidelines for advanced breast cancer (ABC 5). Ann Oncol. 2020 Dec;31(12):1623-1649.
2. Thomssen C., Lüftner D, Untch M, et al. International Consensus Conference for Advanced Breast Cancer, Lisbon 2019: ABC5 Consensus - Assessment by a German Group of Experts. Breast Care (Basel). 2020
3. ASCO (American Association of Clinical Oncology, Practice Guidelines, 2021) http://www.asco.org
4. American Society of Clinical Oncology Clinical Practice Survivorship Guidelines, Endorsements and Adaptations: https://www.asco.org/practice-policy/cancer-care-initiatives/prevention-survivorship/survivorship-compendium-0
5. 2016 Updated American Society of Clinical Oncology/Oncology Nursing Society Chemotherapy Administration Safety Standards, Including Standards for Pediatric Oncology: http://ascopubs.org/doi/pdfdirect/10.1200/JOP.2016.017905
6. Hershman DL, Lacchetti C, Dworkin RH et al. American Society of Clinical Oncology. Prevention and management of chemotherapy-induced peripheral neuropathy in survivors of adult cancers: American Society of Clinical Oncology clinical practice guideline. J Clin Oncol. 2014 Jun 20;32(18):1941-67.

7. NCCN (National Comprehensive Cancer Network , 2021): http://www.nccn.org
8. S3-Leitlinie: Supportive Therapie: Leitlinienprogramm Onkologie (Deutsche Krebsgesellschaft, Deutsche Krebshilfe, AWMF): Supportive Therapie bei onkologischen PatientInnen - Langversion 1.3 – Februar 2020 AWMF-Registernummer: 032/054OL

Guidelines Breast
Version 2024.1D

Supportive Therapie und Nebenwirkungsmanagement

- **Versionen 2002–2023:**
  Albert / Bauerfeind / Brunnert / Bischoff / Costa / Dall / Diel / Fersis / Friedrich / Friedrichs / Gerber / Göhring / Hanf / Harbeck / Heinrich / Huober / Jackisch / Lisboa / Lück / Lüftner / Maass / von Minckwitz / Möbus / Müller / Mundhenke / Nitz / Oberhoff / Park-Simon / Reimer/ Rody / Schaller / Scharl / Schmidt / Schneeweiss / Schütz / Solomayer / Souchon / Stickeler / Thomssen / Untch

- **Version 2024:**
  Kolberg-Liedtke / Würstlein

Leitlinien – Umfeld

Nationale und internationale spezifische Leitlinien befassen sich mit verschiedenen Aspekten der evidenzbasierten supportiven Therapie von Karzinompatientinnen und -patienten.

Ohne Anspruch auf Vollständigkeit werden derartige (bes. deutsche) Leitlinienwerke genannt.

Hier soll insbesondere auf die Aspekte Wert gelegt werden, die Brustkrebspatientinnen betreffen:

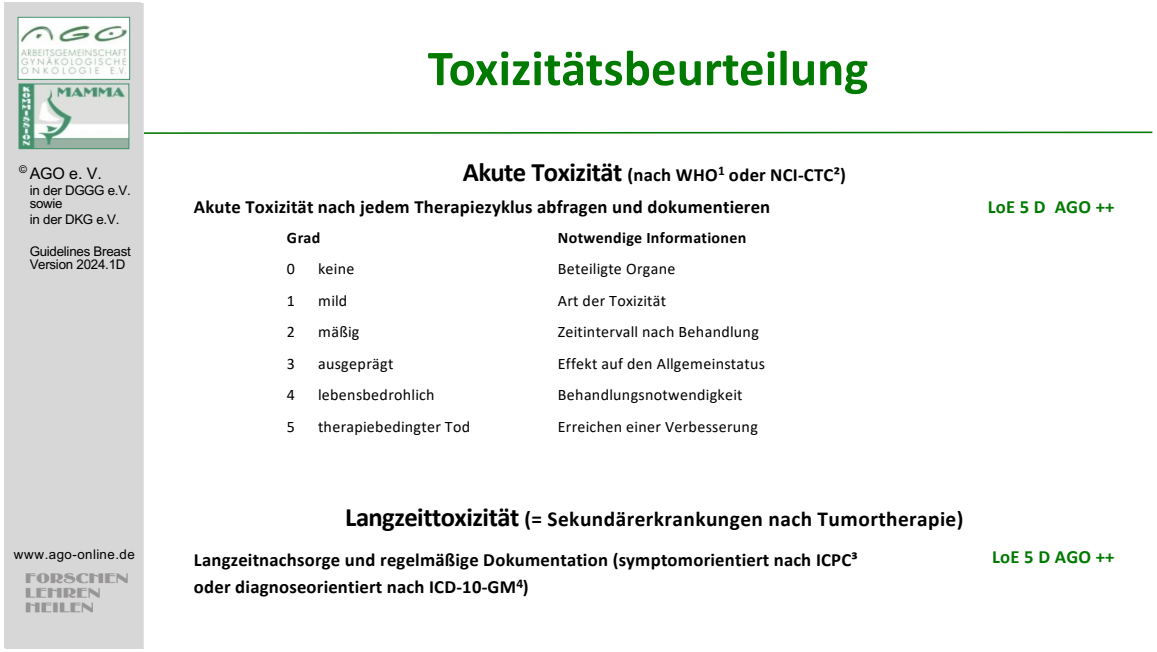
- **S3-Leitlinie: Supportive Therapie bei onkologischen Patientinnen Langversion 1.3 – Februar 2020 AWMF-Registernummer: 032/054OL**

1. S3-Leitlinie Supportive Therapie:
Leitlinienprogramm Onkologie (Deutsche Krebsgesellschaft, Deutsche Krebshilfe, AWMF): Supportive Therapie bei onkologischen PatientInnen - Langversion 1.3 – Februar 2020 AWMF-Registernummer: 032/054OL Zugriff 25.12.2021 https://www.leitlinienprogramm-onkologie.de/fileadmin/user_upload/Downloads/Leitlinien/Supportivtherapie/LL_Supportiv_Langversion_1.3.pdf

2. ESMO Clinical Practice Guidelines: Supportive and Palliative Care. www.esmo.org

3. Jordan K, Aapro M, Kaasa S, et al. European Society for Medical Oncology (ESMO) position paper on supportive and palliative care. Ann Oncol. 2018 Jan 1;29(1):36-43.

4. Schneider BJ, Naidoo J, Santomasso BD, et al. Management of Immune-Related Adverse Events in Patients Treated With Immune Checkpoint Inhibitor Therapy: ASCO Guideline Update. J Clin Oncol. 2021 Dec 20;39(36):4073-4126.



Akute Toxizität

1. WHO Handbook for reporting results of cancer treatment, N0 48 (1979) (WHO offset Publications, Geneva)
2. NCI, Bethesda, USA, Common Terminology Criteria for Adverse Events v5.0 (CTCAE; published 2017); https://ctep.cancer.gov/protocolDevelopment/electronic_applications/ctc.htm#ctc_50 (Download 18.01.2018)

Akute Toxizität nach jedem Therapiezyklus abfragen

1. Cirillo M, Lunardi G, Coati F, et al: Management of oral anticancer drugs: Feasibility and patient approval of a specific monitoring program. Tumori 100: 243-248, 2014

Langzeittoxizität

1. International Classification of Primary Care (ICPC) revised December 2016, http://www.who.int/classifications/icd/adaptations/icpc2/en/ (Download 18.01.2018) or http://www.globalfamilydoctor.com/groups/WorkingParties/wicc.aspx (Download 18.01.2018)
2. Deutschen Institut für Medizinische Dokumentation und Information (DIMDI), ICD-10-GM Version 2017; https://www.dimdi.de/static/de/klassi/icd-10-gm/kodesuche/onlinefassungen/htmlgm2017/ (Download 18.01.2018)
3. Kenyon M, Mayer DK, Owens AK. Late and long-term effects of breast cancer treatment and surveillance management for the general

practitioner. J Obstet Gynecol Neonatal Nurs. 2014 May-Jun;43(3):382-98.
4. Hematopoietic Cell Transplantation Guidelines Taskforce, Auditory and Vision Guidelines Taskforce, Cardiopulmonary Guidelines Taskforce, Endocrine Guidelines Taskforce, Genitourinary and Renal Guidelines Taskforce, Oral, Dental, Gastrointestinal and Hepatic Guidelines Taskforce, et al. Late Effects Surveillance Recommendations among Survivors of Childhood Hematopoietic Cell Transplantation: A Children's Oncology Group Report. Author manuscript; available in PMC 2017 May 1.Published in final edited form as: Biol Blood Marrow Transplant. 2016 May; 22(5): 782–795.
5. Inge Spronk, Joke C Korevaar, Francois G Schellevis, et al. Evidence-based recommendations on care for breast cancer survivors for primary care providers: a review of evidence-based breast cancer guidelines. BMJ Open. 2017; 7(12): e015118.
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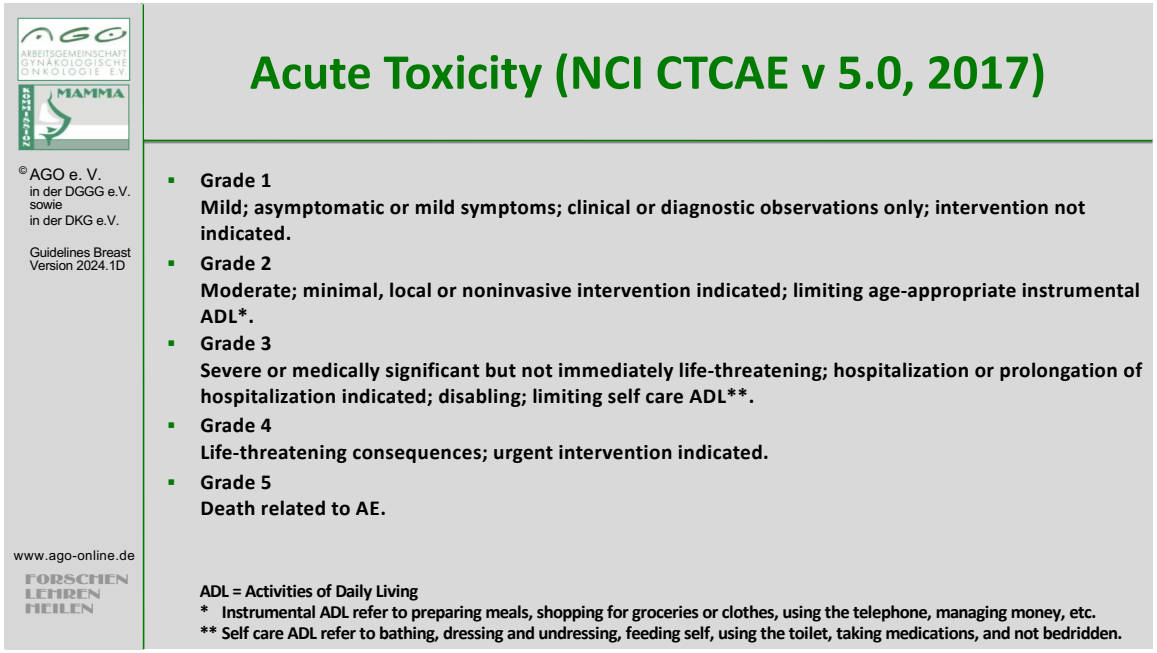

1. NCI, Bethesda, USA, Common Terminology Criteria for Adverse Events v5.0 (CTCAE; published 2017); https://ctep.cancer.gov/protocolDevelopment/electronic_applications/ctc.htm#ctc_50 (Download 18.01.2018)

Einsatz von eHealth (DiGA)

	Oxford		
	LoE	GR	AGO
Anwendung von DiGA zur Verbesserung der Lebensqualität während und nach einer Brustkrebstherapie*	2b	B	+/-
Anwendung von PROs zur verbesserten Erhebung von Therapie-assoziierten Nebenwirkungen und Lebensqualität	2b	B	+/-

*** Siehe aktueller DiGA-Status, verschreibbar**

DiGAs aktuell: diga.bfarm.de

1. Groene N and Schneck L (2023) Covering digital health applications in the public insurance system: how to foster innovation in patient care while mitigating financial risks— evidence from Germany. Front. Digit. Health 5:1217479. doi: 10.3389/fdgth.2023.1217479
2. Kramer U, Borges U, Fischer F, Hoffmann W, Pobiruchin M, Vollmar HC. DNVF-Memorandum – Gesundheits- und Medizin-Apps (GuMAs). Das Gesundheitswesen 2019; 81(10): 154 - 170. DOI: 10.1055/s-0038-1667451
3. Vollmar HC, Kramer U, Müller H, Griemmert M, Noelle G, Schrappe M. Position Paper of The AG Digital Health DNVF on Digital Health Applications: Framework Conditions For Use in Health Care, Structural Development and Science. Gesundheitswesen. 2017 Dec;79(12):1080-1092. doi: 10.1055/s-0043-122233. Epub 2017 Dec 29.; 12/2017
4. Wanchai, A, Anderson EA, and Armer JM. "A Systematic Review of M-Health Apps on Managing Side Effects of Breast Cancer Treatment." [In eng]. Supportive care in cancer : official journal of the Multinational Association of Supportive Care in Cancer 31, no. 1 (2022-12-27 2022): 86. https://doi.org/doi:10.1007/s00520-022-07464-x. https://pubmed.ncbi.nlm.nih.gov/36574048/
5. Horn A, Jírů-Hillmann S, Widmann J, Montellano FA, Salmen J, Pryss R, Wöckel A, Heuschmann PU. Systematic review on the effectiveness of mobile health applications on mental health of breast cancer survivors. Journal of Cancer Survivorship https://doi.org/10.1007/s11764-023-01470-6

6. Singleton AC, Raeside R, Hyun KK, Partridge SR, Di Tanna GL, Hafiz N, Tu Q, et al. "Electronic Health Interventions for Patients with Breast Cancer: Systematic Review and Meta-Analyses." [In eng]. Journal of clinical oncology : official journal of the American Society of Clinical Oncology 40, no. 20 (2022-7-10 2022): 2257-70. https://doi.org/doi:10.1200/JCO.21.01171. https://pubmed.ncbi.nlm.nih.gov/35500200/.
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8. Luo X, Chen Y, Chen J, Zhang Y, Li M, Xiong C, and Yan J. "Effectiveness of Mobile Health-Based Self-Management Interventions in Breast Cancer Patients: A Meta-Analysis." [In eng]. Supportive care in cancer : official journal of the Multinational Association of Supportive Care in Cancer 30, no. 3 (2022-3 2022): 2853-76. https://doi.org/doi:. https://pubmed.ncbi.nlm.nih.gov/34561732/.
9. Jongerius C, Russo S, Mazzocco K, and Pravettoni G. "Research-Tested Mobile Apps for Breast Cancer Care: Systematic Review." [In eng]. JMIR mHealth and uHealth 7, no. 2(2019-2-11 2019): e10930. https://doi.org/doi:. https://pubmed.ncbi.nlm.nih.gov/30741644/
10. Uncovska M, Freitag B, Meister S, Fehring L Rating analysis and BERTopic modeling of consumer versus regulated mHealth app reviews in Germany. Digital Medicine (2023)6:115 ; https://doi.org/10.1038/s41746-023-00862-3
11. Uncovska M, Freitag B, Meister S, Fehring L Rating Patient Acceptance of Prescribed and Fully Reimbursed mHealth Apps in Germany: An UTAUT2-based Online Survey Study.Journal of Medical Systems (2023) 47:14 https://doi.org/10.1007/s10916-023-01910-x
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15. Harbeck N, Kates R, Schinköthe T, Schumacher J, Wuerstlein R, Degenhardt T, Lüftner D, Räth P, Hoffmann O, Lorenz R, Decker T, Reinisch M, Göhler T, Staib P, Gluz O, Fasching PA, Schmidt M; AGO-B, WSG PreCycle investigators. Favorable impact of therapy

management by an interactive eHealth system on severe adverse events in patients with hormone receptor-positive, HER2-negative locally advanced or metastatic breast cancer treated by palbociclib and endocrine therapy. Cancer Treat Rev. 2023 Dec;121:102631. doi: 10.1016/j.ctrv.2023.102631. Epub 2023 Oct 18. PMID: 37862832

Chemotherapie – Akute Toxizitäten I

	Systemorganklasse											
Substanz	Infektionen und parasitäre Erkrank.	Neubildungen, sek. Malignome	Blut, Lymphsystem	Immunsystem, Allergien	Endokrine Erkrankungen	Stoffwechsel- und Ernährungs.-Stör.	Psychiatrische Erkrankungen	Erkrankungen des Nervensystems	Augenerkrank.	Erkrank. des Ohrs und des Labyrinths	Herzerkrankungen	Gefäßerkrank.
Alkylantien												
Cyclophosphamid	4	2	5	5	1	-	1	3	2	3	3	3
Antimetabolite												
Methotrexat	1	-	4	3	3	-	3	4	2	-	1	2
5-Fluorouracil*	5	-	5	2	2	5	-	3	3	-	5	3
Capecitabin	4	3 (Lipom)	4	3	-	5	4	4	4	3	3	4
Gemcitabin	4	-	5	1	-	4	-:	4	-	-	2	2
Platin-Komplexe												
Cisplatin	4	2	5	3	2	5	-	4	2	5	4	4
Carboplatin	4	-	5	4	-	-	-	4	4	4	4	-
Anthrazykline / Anthrachinone												
Epi-/Doxorubicin	5	3	5	1-2	-	1-5	-	-	4	-	4	5
Liposom. Doxorubicin	5	-	5	-	-	5	3	4	(4)	-	4	4
PEG-lipos. Doxorubicin	4	-	4	-	-	5	-	4	4	-	4	-
Mitoxantron	5	3	5	3	-	4	-	4	3	3	4	3
Taxane												
Paclitaxel	5	1	5	5	-	1	1	5	1	1	4	5
nab-Paclitaxel	4	-	5	3	-	5	4	5	4	4	4	4
Docetaxel	5	-	5	5	-	5	-	5	-	-	4	4
Andere Spindelgifte												
Vinorelbin IV (PO)	5(5)	-	-(5)	2(-)	-	-	-(5)	-(5)	-(4)	-	2(3)	3(4)
Eribulin	4	-	4	-	-:	5	4	5	4	4	4	4

Die Liste und Graduierung der Nebenwirkungen ist nach Systemorganklassen, MedDRA-Terminologie und den folgenden Häufigkeitskategorien dargestellt:
1. Sehr selten (< 1/10.000); 2. Selten (≥ 1/1.000 bis < 1/10.000); 3. Gelegentlich (≥ 1/1.000 bis < 1/100); 4. Häufig (≥ 1/100 bis < 1/10); 5. Sehr häufig (≥ 1/10).
- Nicht bekannt (Häufigkeit auf Grundlage der verfügbaren Daten nicht abschätzbar)

Nebenwirkungskategorien - MedDRA (Medical Dictionary for Regulatory Activities)

1. MedDRA: https://www.meddra.org/ bzw. https://www.meddra.org/sites/default/files/guidance/file/intguide_20_1_english_0.pdf

Quellen für die Fachinformationen (Download 19.01.2018) **s. aktuelle Fachinformation www. Fachinfo.de**

1. Cyclophosphamid: http://www.baxter.de/de_DE/assets/downloads/fachinformation/endoxan.pdf
2. Methotrexat: https://www.gelbe-liste.de/produkte/MTX-HEXAL-10-mg-Tabletten_117469/fachinformation
3. 5-Fluorouracil: https://www.gelbe-liste.de/produkte/Fluorouracil-HEXAL-50-mg-ml-Injektionsloesung-100-ml_546519/fachinformation
4. Capecitabin: https://www.zentiva.de/Produkte/Capecitabin-Zentiva/Downloads?id=a63946ee-51ce-46ac-8184-a468b705ed9b
5. Gemcitabin: http://www.success-studie.de/b/downloads/Fachinfo/GemzarFI07Jan.pdf
6. Cisplatin: https://www.gelbe-liste.de/produkte/Cisplatin-Teva-1-mg-ml-Konzentrat-zur-Herstellung-einer-Infusionsloesung-100-ml_543960/fachinformation
7. Carboplatin: http://www.teva.de/index.php?eID=dumpFile&t=f&f=37532&g=-

1&r=11068%2C11068&token=eebfb22e78f1cc8d9935d59c087e80630146f49e
8. Epirubicin:
9. Doxorubicin:
10. Liposomales Doxorubicin: https://www.gelbe-liste.de/produkte/Myocet-50-mg-Pulver-Dispersion-u-Loesungsmittel-fuer-ein-Konzentrat-zur-Herstellung-einer-Infusionsdispersion_359323/fachinformation
11. PEG-lipo. Doxorubicin: https://www.gelbe-liste.de/produkte/Caelyx-2-mg-ml-Konzentrat-zur-Herstellung-einer-Infusionsloesung-10-ml_121890/fachinformation
12. Mitoxantron: https://www.gelbe-liste.de/produkte/Mitoxantron-Teva-2-mg-ml-Injektionsloesung-15ml_543783/fachinformation
13. Paclitaxel: https://medikamio.com/de-de/medikamente/paclitaxel-ratiopharm/pil
14. Nab-Paclitaxel: https://www.gelbe-liste.de/produkte/Abraxane-5-mg-ml-Pulver-zur-Herstellung-einer-Infusionssuspension_514889/fachinformation
15. Docetaxel: https://mein.sanofi.de/produkte/Taxotere/Downloads?id=89447754-dfb2-450b-b35a-36950de8a74d
16. Vinorelbin: http://www.detect-studien.de/dokumente/d3/fachinfo/Navelbine.pdf
17. Eribulin: http://www.detect-studien.de/dokumente/d4/fachinfo/Fachinfo_Eribulin_Halaven.pdf

Weitere Referenzen (Auswahl)

1. Azim HA Jr, de Azambuja E, Colozza M, et al.: Long-term toxic effects of adjuvant chemotherapy in breast cancer. Ann Oncol. 2011 Sep;22(9):1939-47.
2. Petrelli F et al: Mortality, leukemic risk, and cardiovascular toxicity of adjuvant anthracycline and taxane chemotherapy in breast cancer: a meta-analysis. Breast Cancer Res Treat. 2012 Sep;135(2):335-46
3. Jim HS et al: Meta-analysis of cognitive functioning in breast cancer survivors previously treated with standard-dose chemotherapy. J Clin Oncol. 2012 Oct 10;30(29):3578-87
4. Cortes J, O'Shaughnessy J, Loesch D et al. Eribulin monotherapy versus treatment of physician's choice in patients with metastatic breast cancer (EMBRACE): a phase 3 open-label randomised study. Lancet. 2011;377:914-23
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6. Fox P, Darley A, Furlong E, et al: The assessment and management of chemotherapy-related toxicities in patients with breast cancer, colorectal cancer, and Hodgkin's and non-Hodgkin's lymphomas: A scoping review. Eur J Oncol Nurs. 2017 Feb;26:63-82. doi:

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12. Madeddu C, Deidda M, Piras A, et al. Pathophysiology of cardiotoxicity induced by nonanthracycline chemotherapy. J Cardiovasc Med (Hagerstown). 2016 May;17 Suppl 1 Special issue on Cardiotoxicity from Antiblastic Drugs and Cardioprotection:e12-e18. Review.

Chemotherapie – Akute Toxizitäten II

Substanz	Systemorganklasse: Erkr. d. Atemwege, Brustraum, Mediast.	Erkr. d. GI.-Traktes (Übelk./Erbrechen)	Leber- und Gallenerkrankungen	Erkr. d. Haut/Unterhaut (inkl. Alopezie)	Skelettmus.-, Bindegew.-u.Knochenerkr.	Erkr. der Nieren und Harnwege	Schwang.-, Wochenbett u. perinatale E.	Erkr. d. Geschlechtsorgane u. Brustdrüse	Allg. Erkr. u. Beschw. am Applikationsort	Kongenit., famil. und genet. Erkr.	Besonderheiten
Alkylantien											
Cyclophosphamid	2	4	4	5	-	5	-	4	5	-	Hyponatriämie
Antimetabolite											
Methotrexat	4	5	5	4	3	3	-	3	1	-	Mukositits, Risiko "third space"-Toxizität
5-Fluorouracil	5	5	3	5	-	-	-	-	5	-	Risiko DPD-Mangel: leicht 5%, schwer 0,1%; Diarrhoe, Herz
Capecitabin	4	5	4	5	4	3	-	3	5	-	Hand-Fuß-.Syndrom (HFS), Risiko DPD-Mangel; Herz
Gemcitabin	5	5	5	5	4	5	-	-	5	-	Flu-like Symptome, Ödeme, Herz
Platin-Komplexe											
Cisplatin	4	5	4	4	-	5	-	3	5	-	Nierentoxizität, Ototoxizität, CIPN
Carboplatin	4	5	-	4	4	4	-	-	4	-	Kolitis, (Nierentox.)
Anthrazykline / Anthrachinone											
Epi-/Doxorubicin	2	5	-	5	1	4		1	5	-	Kardiotoxizität (CHF), sek. Malignome, Paravast
Lipo. Doxorubicin	4	5	4	5	4	3	-	(4)	5	-	
PEG-lipo. Doxo.	4	5	-	5	4	-	-	4	5	-	Palmares und plantares Erythem (PPE)
Mitoxantron	4	5	3	5	-	3	-	3	4	-	Sek. AML, Kardiomyopathie
Taxane											
Paclitaxel	2	5	1	5	5	-	-	-	5	-	Periphere Neuropathie (CIPN); Hypersensit., Myalgien
nab-Paclitaxel	4	5	3	5	5	3	-	3	5	-	Periphere Neuropathie (CIPN)
Docetaxel	5	5	-	5	5	-	-	-	5	-	Fluid retention, Paronychie, Kolitis, Myalgie
Andere Spindelgifte											
Vinorelbin IV (PO)	3(4)	2 (5)	5(4)	2(5)	-(4)	2(4)	-	-	-	-	Phlebitis, GI-Tox (PO), CIPN
Eribulin	5	5	4	5	5	4	-	-	5	-	Obstipation, CIPN

Die Liste und Graduierung der Nebenwirkungen ist nach Systemorganklassen, MedDRA-Terminologie und den folgenden Häufigkeitskategorien dargestellt:
1. Sehr selten (< 1/10.000); 2. Selten (≥ 1/1.000 bis < 1/10.000); 3. Gelegentlich (≥ 1/1.000 bis < 1/100); 4. Häufig (≥ 1/100 bis < 1/10); 5. Sehr häufig (≥ 1/10).
- Nicht bekannt (Häufigkeit auf Grundlage der verfügbaren Daten nicht abschätzbar)

Abkürzungen

AML = Akute myeloische Leukämie; DPD = Dihydropyrimidin-Dehydrogenase); CHF = Kardiomyopathie; CIPN = Chemotherapie induzierte periphere Neuropathie; HFS = Hand-Fuß-Syndrom; PPE = Palmares und plantares Erythem.

Nebenwirkungskategorien - MedDRA (Medical Dictionary for Regulatory Activities)

1. MedDRA: https://www.meddra.org/ bzw. https://www.meddra.org/sites/default/files/guidance/file/intguide_20_1_english_0.pdf

Quellen für die Fachinformationen (Download 19.01.2018)

1. Cyclophosphamid: http://www.baxter.de/de_DE/assets/downloads/fachinformation/endoxan.pdf
2. Methotrexat: https://www.gelbe-liste.de/produkte/MTX-HEXAL-10-mg-Tabletten_117469/fachinformation
3. 5-Fluorouracil: https://www.gelbe-liste.de/produkte/Fluorouracil-HEXAL-50-mg-ml-Injektionsloesung-100-ml_546519/fachinformation
4. Capecitabin: https://www.zentiva.de/Produkte/Capecitabin-Zentiva/Downloads?id=a63946ee-51ce-46ac-8184-a468b705ed9b
5. Gemcitabin: http://www.success-studie.de/b/downloads/Fachinfo/GemzarFI07Jan.pdf

6. Cisplatin: https://www.gelbe-liste.de/produkte/Cisplatin-Teva-1-mg-ml-Konzentrat-zur-Herstellung-einer-Infusionsloesung-100-ml_543960/fachinformation
7. Carboplatin: http://www.teva.de/index.php?eID=dumpFile&t=f&f=37532&g=-1&r=11068%2C11068&token=eebfb22e78f1cc8d9935d59c087e80630146f49e
8. Epirubicin:
9. Doxorubicin:
10. Liposomales Doxorubicin: https://www.gelbe-liste.de/produkte/Myocet-50-mg-Pulver-Dispersion-u-Loesungsmittel-fuer-ein-Konzentrat-zur-Herstellung-einer-Infusionsdispersion_359323/fachinformation
11. PEG-lipo. Doxorubicin: https://www.gelbe-liste.de/produkte/Caelyx-2-mg-ml-Konzentrat-zur-Herstellung-einer-Infusionsloesung-10-ml_121890/fachinformation
12. Mitoxantron: https://www.gelbe-liste.de/produkte/Mitoxantron-Teva-2-mg-ml-Injektionsloesung-15ml_543783/fachinformation
13. Paclitaxel: https://medikamio.com/de-de/medikamente/paclitaxel-ratiopharm/pil
14. Nab-Paclitaxel: https://www.gelbe-liste.de/produkte/Abraxane-5-mg-ml-Pulver-zur-Herstellung-einer-Infusionssuspension_514889/fachinformation
15. Docetaxel: https://mein.sanofi.de/produkte/Taxotere/Downloads?id=89447754-dfb2-450b-b35a-36950de8a74d
16. Vinorelbin: http://www.detect-studien.de/dokumente/d3/fachinfo/Navelbine.pdf
17. Eribulin: http://www.detect-studien.de/dokumente/d4/fachinfo/Fachinfo_Eribulin_Halaven.pdf

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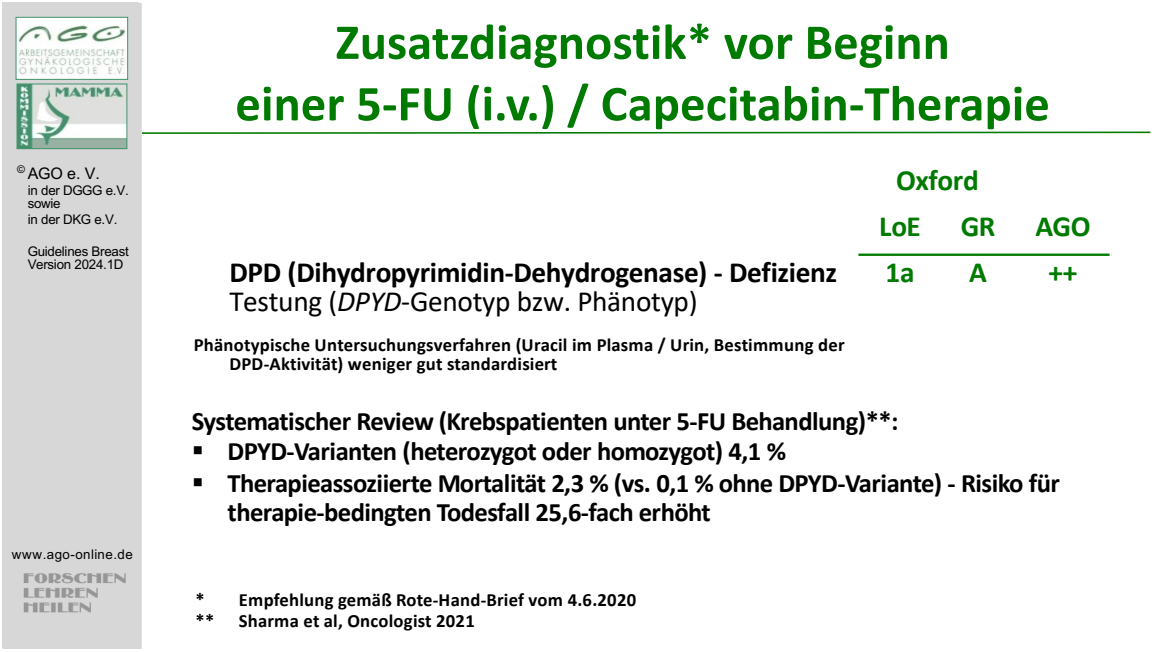

DPD Defizienz:

1. Rote-Hand-Brief vom 04.06.2020: https://www.bfarm.de/SharedDocs/Risikoinformationen/Pharmakovigilanz/DE/RHB/2020/rhb-fluorouracil.html (Zugriff am 17.01.2022)
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Endokrine Therapie – Toxizitäten

	Tamoxifen	Anastrazol	Exemestan	Letrozol	Fulvestrant	Elacstrant
Infektionen / parasitäre Erkrankungen	-	-	-	3	4	-
Neubildungen / Malignome	3	-	-	-	-	-
Blut / Lymphsystem	4	-	4	3	3	-
Immunsystem / Allergien	-	-	-	-	4	-
Endokrine Erkrankungen	3	-	-	-	-	5
Stoffwechsel- / Ernährungsstörungen	5	4	4	5	4	5
Psychiatrische Erkrankungen	-	5	5	4	-	5
Erkrankungen des Nervensystems	4	5	4	4	4	-
Augenerkrankungen	4	4	-	3	-	-
Erkrankungen des Ohrs / Labyrinths	-	-	-	-	-	-
Herzerkrankungen	-	4	-	3	-	-
Gefäßerkrankungen (inkl. Hitzewellen)	4	5	5	5	4	5

Die Liste und Graduierung der Nebenwirkungen ist nach Systemorganklassen, MedDRA-Terminologie und den folgenden Häufigkeitskategorien dargestellt:
1. Sehr selten (< 1/10.000); 2. Selten (≥ 1/1.000 bis < 1/10.000); 3. Gelegentlich (≥ 1/1.000 bis < 1/100); 4. Häufig (≥ 1/100 bis < 1/10); 5. Sehr häufig (≥ 1/10).
- Nicht bekannt (Häufigkeit auf Grundlage der verfügbaren Daten nicht abschätzbar)

Side effect categories- MedDRA (Medical Dictionary for Regulatory Activities)

1. MedDRA: https://www.meddra.org/ bzw.
   https://www.meddra.org/sites/default/files/guidance/file/intguide_20_1_english_0.pdf

Sources for product information (Download 19.01.2018)

1. Tamoxifen: https://www.gelbe-liste.de/produkte/Tamoxifen-20-mg-HEXAL-Filmtbl_8660/fachinformation
2. Anastrozol: https://imedikament.de/anastrozol-ratiopharm-1-mg-filmtabletten/fachinformation
3. Exemestan: http://www.success-studie.de/c/downloads/Fachinfo/FI_ExemestanAromasin.pdf
4. Letrozol: http://www.success-studie.de/b/downloads/Fachinfo/Femara_Juli_2014.pdf
5. Fulvestrant: https://www.gelbe-liste.de/produkte/Fulvestrant-HEXAL-250-mg-Injektionsloesung-in-einer-Fertigspritze_912622/fachinformation

Elacestrant: Fachinformation Elacestrant 2023

Endokrine Therapie – Toxizitäten

	Tamoxifen	Anastrazol	Exemestan	Letrozol	Fulvestrant	Elacstrant
Erkrankungen von Atemwegen / Thorax / Mediastinum	3	-	-	3	-	-
Erkrankungen des Gastrointestinaltrakts	5	5	5	4	5	5
Leber- und Gallenerkrankungen	4	4	-	3	5	4
Erkrankungen von Haut / Unterhautgewebe	5	5	5	5	4	-
Skelettmuskulatur / Bindegewebe / Knochen	4	5	5	5	4	5
Erkrankungen von Nieren / Harnwegen	-	-	-	3	4	-
Schwangerschaft, Geburt, Wochenbett,	-	-	-	-	-	-
Erkrankungen von Geschlechtsorganen / Brustdrüse	5	5	-	4	3	-
Allergische Erkrankungen / Besonderheiten am Applikationsort	5	5	5	5	5	-
Kongenität, familiäre / genetische Erkrankungen	1	-	-	-	-	-
Besonderheiten	*	**	**	**	***	
* Hitzewallungen, selten: EndometriumCa / Thrombose ** Hitzewallungen / Arthralgie, Osteoporose, Kognition *** Hitzewallungen						

Die Liste und Graduierung der Nebenwirkungen ist nach Systemorganklassen, MedDRA-Terminologie und den folgenden Häufigkeitskategorien dargestellt:
1. Sehr selten (< 1/10.000); 2. Selten (≥ 1/1.000 bis < 1/10.000); 3. Gelegentlich (≥ 1/1.000 bis < 1/100); 4. Häufig (≥ 1/100 bis < 1/10); 5. Sehr häufig (≥ 1/10).
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Side effect categories- MedDRA (Medical Dictionary for Regulatory Activities)

1. MedDRA: https://www.meddra.org/ bzw. https://www.meddra.org/sites/default/files/guidance/file/intguide_20_1_english_0.pdf

Sources for product information (Download 19.01.2018)

1. Tamoxifen: https://www.gelbe-liste.de/produkte/Tamoxifen-20-mg-HEXAL-Filmtbl_8660/fachinformation
2. Anastrozol: https://imedikament.de/anastrozol-ratiopharm-1-mg-filmtabletten/fachinformation
3. Exemestan: http://www.success-studie.de/c/downloads/Fachinfo/FI_ExemestanAromasin.pdf
4. Letrozol: http://www.success-studie.de/b/downloads/Fachinfo/Femara_Juli_2014.pdf
5. Fulvestrant: https://www.gelbe-liste.de/produkte/Fulvestrant-HEXAL-250-mg-Injektionsloesung-in-einer-Fertigspritze_912622/fachinformation

Nebenwirkungen – Antikörper

	Oxford LoE	Oxford GR
Trastuzumab		
Kardiotoxizität in der adjuvanten Therapie (1,0–2,0 %)	1b	A
Troponin I als Marker für Kardiotoxizität	2b	B
Pertuzumab		
Ekzem, Diarrhoe, Mukositis	1b	A
Bevacizumab		
▪ Hypertonus, linksventrikuläre Dysfunktion, Blutung, Proteinurie	1a	A

Cardiotoxicity

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Nebenwirkungen anti-HER2 TKI: Neratinib, Lapatinib

Guidelines Breast
Version 2024.1D

Lapatinib

UE, %	Alle Grade	Grad >/= 3
Diarrhöe	61 %	6 %
Nausea	18 %	4 %
Hautausschlag	60 %	6 %
Fatigue	16 %	4 %
Kardiale NW	3 %	< 1 % SAE
Hepatobiliäre NW	8 %	
Alle UE	92 %	SAE 6 %

	LoE	GR	AGO
Primäre Prophylaxe mit Loperamid	2b	B	++

Neratinib

UE, %	Alle Grade (%)	Grad >/=3 (%)
Diarrhöe	90	40,1
Nausea	43	2
Bauchschmerzen	36	2
Fatigue	27	2
Erbrechen	26	3
Hautausschlag	18	0,6
Stomatitis	14	0,6
Appetitverlust	12	0,2
Dyspepsie	10	0,4
ALAT-Erhöhungen	9	1,2
ASAT-Erhöhungen	7	0,7
Nagelstörungen	8	0,3
Trockene Haut	6	0

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3. Neratinib, Lapatinb s. aktuelle Fachinformation www. Fachinfo.de

Nebenwirkungen anti-HER2 TKI
Tucatinib + Trastuzumab + Capecitabin

NW	Alle Grade (%)	≥ Grad 3 (%)
Alle Ereignisse	99.3	55.2
Diarrhoe	80.9	12.9
PPE Syndrom	63.4	13.1
Übelkeit	58.4	3.7
Fatigue	45.0	4.7
Erbrechen	35.9	3.0
Stomatitis	25.5	2.5
Red. Appetit	24.8	0.5
Kopfschmerz	21.5	0.5

1. Murthy RK, Loi S, Okines A, et al. Tucatinib, Trastuzumab, and Capecitabine for HER2-Positive Metastatic Breast Cancer. N Engl J Med. 2020 Feb 13;382(7):597-609. doi: 10.1056/NEJMoa1914609. Epub 2019 Dec 11.
2. Tucatinib, Trastuzumab, Capecitabin s. aktuelle Fachinformation www. Fachinfo.de

Nebenwirkungen – Antikörper-Wirkstoff-Konjugate

	Oxford LoE	Oxford GR
Sacituzumab Govitecan		
(Febrile) Neutropenie, Leukopenie, Anämie, Diarrhoe, Übelkeit, Alopezie, Fatigue	1b	A
Trastuzumab-Emtansin (T-DM1)		
Thrombozytopenie, Anstieg Leberenzyme Fieber, Kopfschmerzen, Pneumonitis, Polyneuropathie, Fatigue	1b	A
Trastuzumab-Deruxtecan		
Interstitielle Lungenerkrankung, Neutropenie, Übelkeit, Alopezie, Fatigue	1b	A

Sacituzumab Govitecan

1. Bardia A, Hurvitz SA, Tolaney SM, et al. Sacituzumab Govitecan in Metastatic Triple-Negative Breast Cancer. N Engl J Med. 2021 Apr 22;384(16):1529-1541.
2. Rugo HS, Tolaney SM, Loirat D, et al. Safety analyses from the phase 3 ASCENT trial of sacituzumab govitecan in metastatic triple-negative breast cancer. NPJ Breast Cancer. 2022 Aug 29;8(1):98.

T-DM1

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2. von Minckwitz G, Huang CS, Mano MS, et al.; KATHERINE Investigators. Trastuzumab Emtansine for Residual Invasive HER2-Positive Breast Cancer. N Engl J Med. 2018 Dec 5. doi: 10.1056/NEJMoa1814017
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Trastuzumab-Deruxtecan

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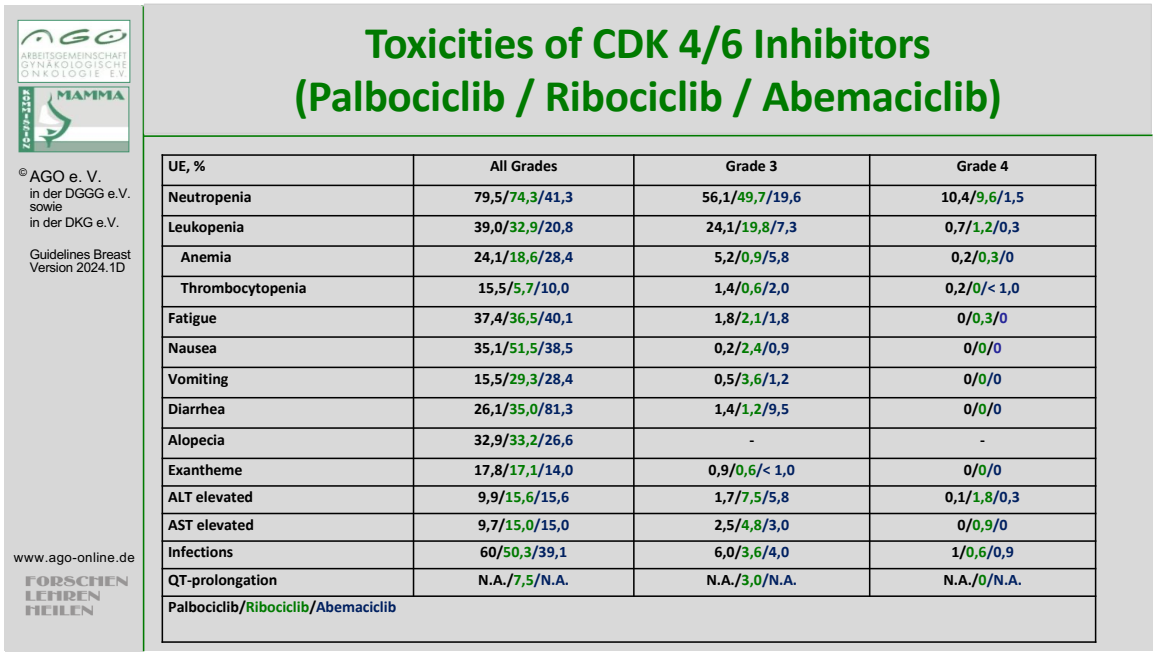
Siehe Fachinformationen zu den Substanzen



UE, %	All Grades	Grade 3	Grade 4
Neutropenia	79,5/74,3/41,3	56,1/49,7/19,6	10,4/9,6/1,5
Leukopenia	39,0/32,9/20,8	24,1/19,8/7,3	0,7/1,2/0,3
Anemia	24,1/18,6/28,4	5,2/0,9/5,8	0,2/0,3/0
Thrombocytopenia	15,5/5,7/10,0	1,4/0,6/2,0	0,2/0/< 1,0
Fatigue	37,4/36,5/40,1	1,8/2,1/1,8	0/0,3/0
Nausea	35,1/51,5/38,5	0,2/2,4/0,9	0/0/0
Vomiting	15,5/29,3/28,4	0,5/3,6/1,2	0/0/0
Diarrhea	26,1/35,0/81,3	1,4/1,2/9,5	0/0/0
Alopecia	32,9/33,2/26,6	-	-
Exantheme	17,8/17,1/14,0	0,9/0,6/< 1,0	0/0/0
ALT elevated	9,9/15,6/15,6	1,7/7,5/5,8	0,1/1,8/0,3
AST elevated	9,7/15,0/15,0	2,5/4,8/3,0	0/0,9/0
Infections	60/50,3/39,1	6,0/3,6/4,0	1/0,6/0,9
QT-prolongation	N.A./7,5/N.A.	N.A./3,0/N.A.	N.A./0/N.A.
Palbociclib/Ribociclib/Abemaciclib			

Palbociclib

1. Verma S, Bartlett CH, Schnell P, et al. Palbociclib in Combination With Fulvestrant in Women With Hormone Receptor-Positive/HER2-Negative Advanced Metastatic Breast Cancer: Detailed Safety Analysis From a Multicenter, Randomized, Placebo-Controlled, Phase III Study (PALOMA-3). Oncologist. 2016 Oct;21(10):1165-1175. Epub 2016 Jul 1.
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Ribociclib

1. Hortobagyi GN, Stemmer SM, Burris HA, et al. Ribociclib as First-Line Therapy for HR-Positive, Advanced Breast Cancer. N Engl J Med. 2016 Nov 3;375(18):1738-1748. Epub 2016 Oct 7.
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Abemaciclib

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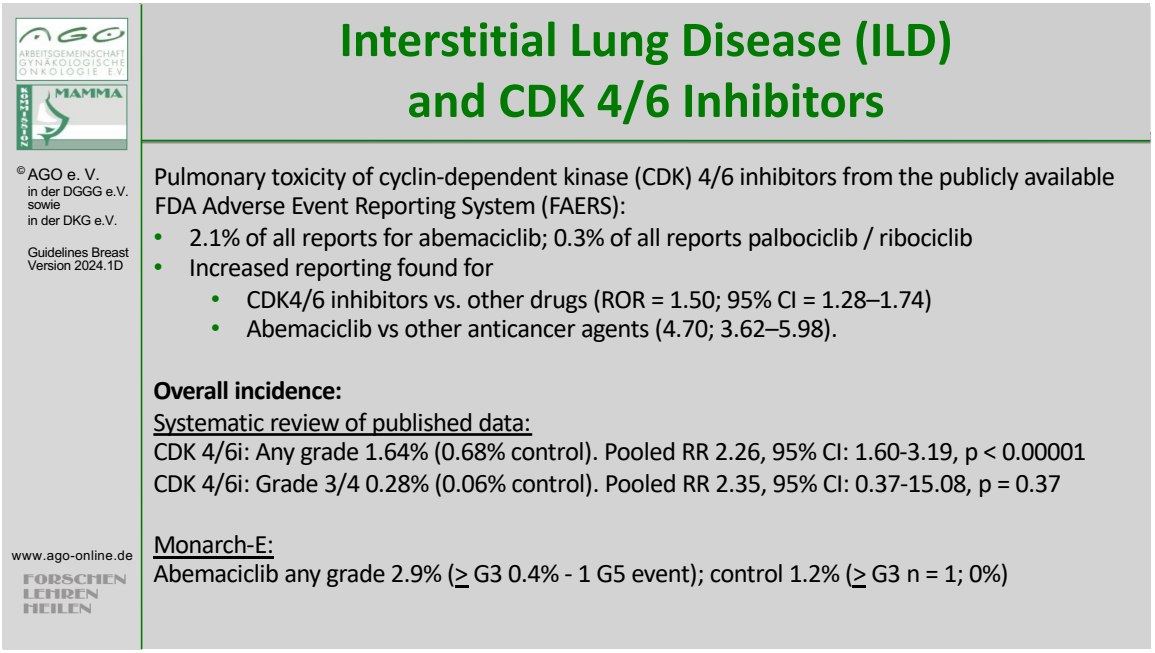
3. Lu YS, Im SA, Colleoni M et al. Abemaciclib plus endocrine therapy for hormone receptor-positive, HER2-negative, node-positive, high-risk early breast cancer (monarchE): results from a preplanned interim analysis of a randomised, open-label, phase 3 trial. Clin Cancer Res. 2022 Mar 1;28(5):851-859.

Siehe Fachinformation zu den Substanzen



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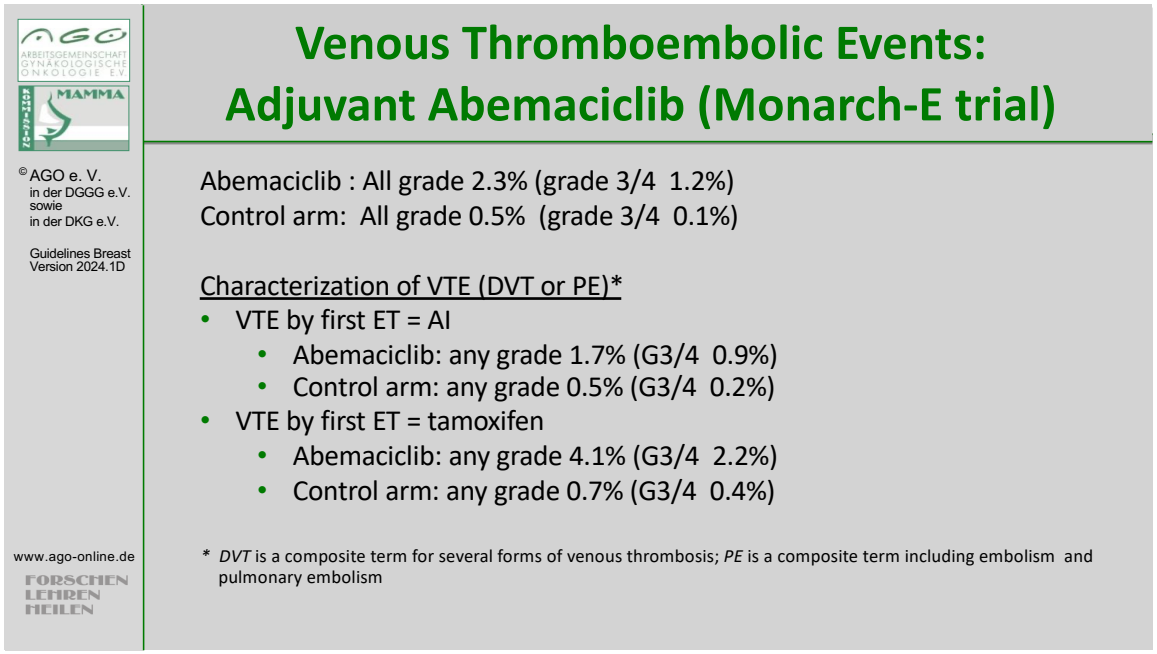

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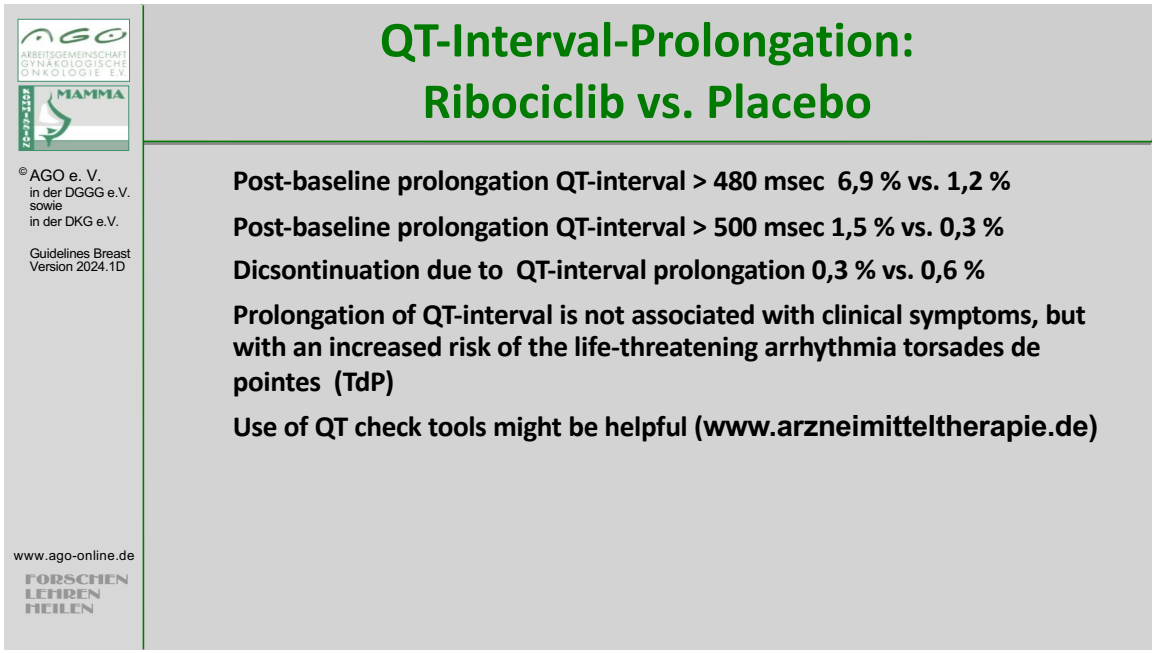

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Toxicities of mTOR-Inhibitor (Everolimus)

UE, %	All grades (%)	grade >/=3 (%)
Stomatitis	11,6	1,6
Exanthema	7,4	0,02
Anemia	3,3	1,3
Fatigue	6,8	0,8
Nausea	5,6	0
Emesis / Vomiting	2,9	0
Diarrhea	6,2	0,02
Loss of appetite	6,0	0,02
Headache	3,9	0
Weight loss	3,9	0
Dyspnea	3,8	0,08
Arthralgia	3,3	0
Epistaxis	3,1	0
Edema	2,9	0
Constipation	2,6	
Pyrexia	2,9	0
Cough	4,5	0
ALT Elevated	2,6	0
Pneumonitis	0,2	0
Asthenia	2,4	0,04
Dysgeusia	4,3	0

1. Baselga J, Campone M, Piccart M et al Everolimus in postmenopausal hormone receptor positive advanced breast cancer N Engl J Med:366,: 520 -529, 2012

s. aktuelle Fachinformation: www.Fachinfo.de

Nebenwirkungen Alpelisib (PI3K-Inhibitor) in Kombination mit endokriner Therapie

Alpelisib + Fulvestrant

UE, %	Alle Grade	Grad ≥ 3
Hypergykämie	63,7 %	32,7 %
Diarrhö	57,7 %	6,7 %
Übelkeit	44,7 %	2,5 %
Appetitlosigkeit	35,6 %	< 1 % SAE
Hautausschlag	35,5 %	9,9 %
Erbrechen	27,1 %	< 1 % SAE
Gewichtsverlust	26,8 %	3,9 %
Stomatitis	24,6 %	2,5 %
Fatique	24,3 %	3,5
Asthenie	20,4 %	1,8
Haarverlust	19,7 %	0
Mucositis	18,3 %	2,1

Berücksichtigung der Empfehlungen zum Nebenwirkungsmanagement (Diabetes mellitus, Hyperglykämie, Insulinresistenz und metabolisches Syndrom)

LoE	GR	AGO
2b	B	++

1. H. S. Rugo, F. André, et al. Time Course and Management of Key Adverse Events During the Randomized Phase 3 SOLAR-1 Study of PI3K inhibitor Alpelisib Plus Fulvestrant in Patients With HR-Positive Advanced Breast Cancer in press, 2020
2. Andre F, Ciruelos E, Rubovszky G et al.:Alpelisib for pik3ca-mutated, hormone receptor-positive advanced breast cancer. N Engl J Med 2019;380:1929-1940.
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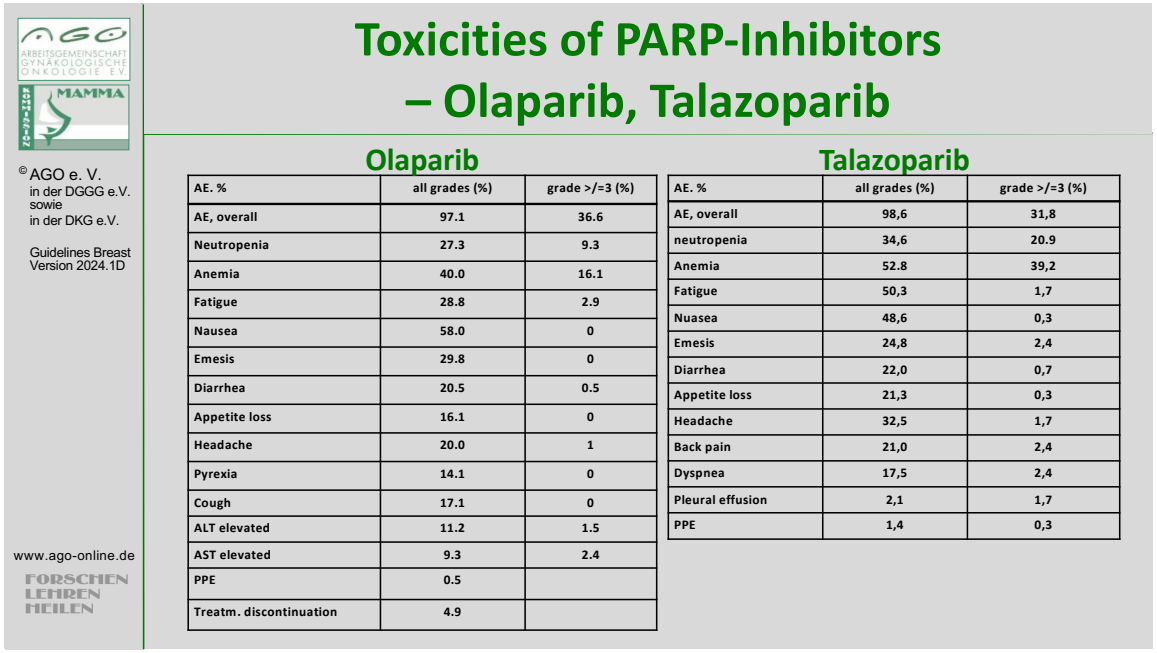

Olaparib

AE. %	all grades (%)	grade >/=3 (%)
AE, overall	97.1	36.6
Neutropenia	27.3	9.3
Anemia	40.0	16.1
Fatigue	28.8	2.9
Nausea	58.0	0
Emesis	29.8	0
Diarrhea	20.5	0.5
Appetite loss	16.1	0
Headache	20.0	1
Pyrexia	14.1	0
Cough	17.1	0
ALT elevated	11.2	1.5
AST elevated	9.3	2.4
PPE	0.5	
Treatm. discontinuation	4.9	

Talazoparib

AE. %	all grades (%)	grade >/=3 (%)
AE, overall	98,6	31,8
neutropenia	34,6	20.9
Anemia	52.8	39,2
Fatigue	50,3	1,7
Nuasea	48,6	0,3
Emesis	24,8	2,4
Diarrhea	22,0	0,7
Appetite loss	21,3	0,3
Headache	32,5	1,7
Back pain	21,0	2,4
Dyspnea	17,5	2,4
Pleural effusion	2,1	1,7
PPE	1,4	0,3

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2. Robson M, Im SA, Senkus E et al. Olaparib for metastatic breast cancer in patients with germline BRCA mutation N Engl J Med 377: 523-533, 2017

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Immun-Checkpoint-Inhibitoren

- **Therapeutische Ansätze (Antikörper)**
  - **PD-1 / PD-L1**

PD-1
- **Nivolumab**
- **Pembrolizumab**

PD-L1
- **Atezolizumab**
- **Durvalumab**
- **Avelumab**

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2. Mayer IA, Prat A, Egle D, et al.: A Phase II Randomized Study of Neoadjuvant Letrozole Plus Alpelisib for Hormone Receptor-Positive, Human Epidermal Growth Factor Receptor 2-Negative Breast Cancer (NEO-ORB) Clin Cancer Res. 2019 May 15; 25(10): 2975

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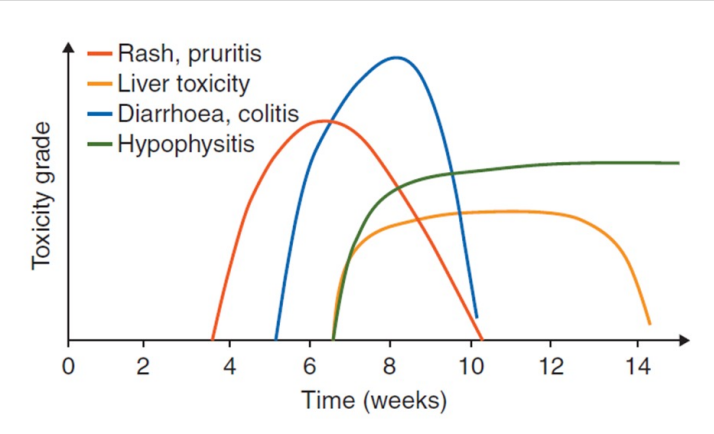
4. –2987.

Immune Checkpoint Inhibitors
Time Course of Adverse Events, e.g. Ipilimumab



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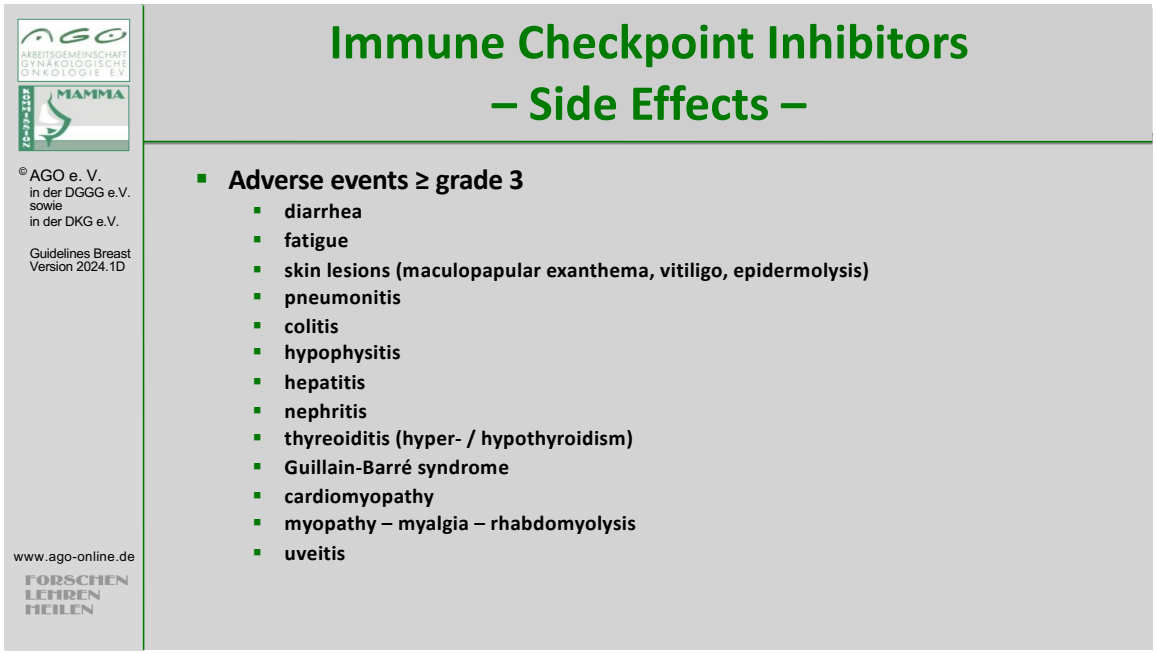

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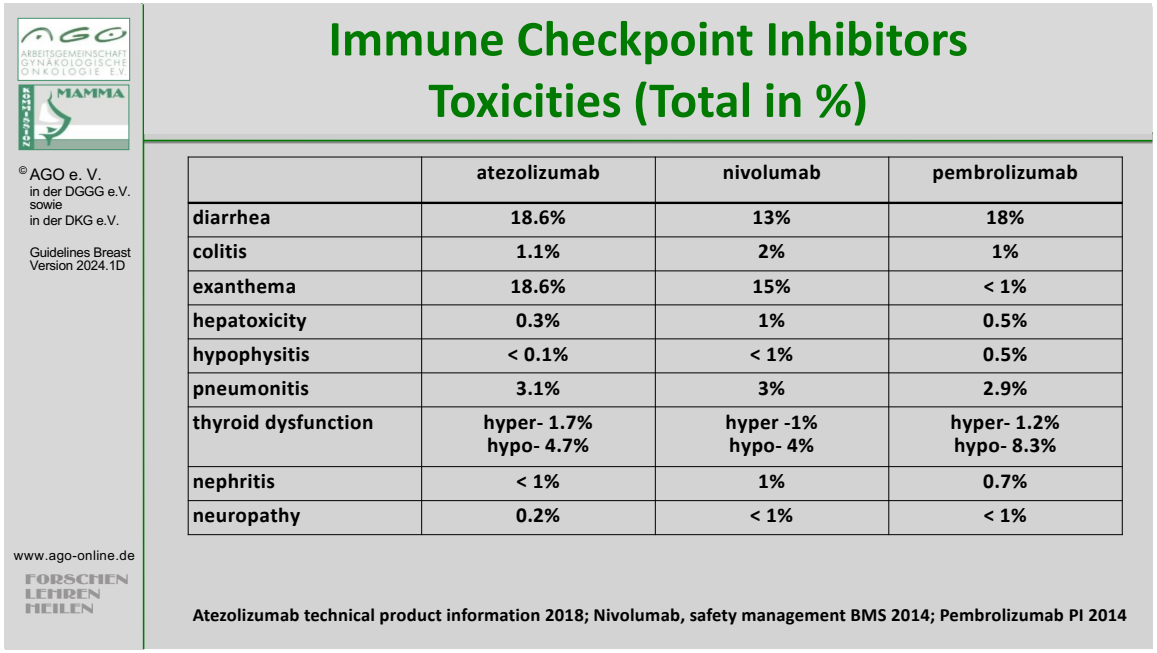

	atezolizumab	nivolumab	pembrolizumab
diarrhea	18.6%	13%	18%
colitis	1.1%	2%	1%
exanthema	18.6%	15%	< 1%
hepatoxicity	0.3%	1%	0.5%
hypophysitis	< 0.1%	< 1%	0.5%
pneumonitis	3.1%	3%	2.9%
thyroid dysfunction	hyper- 1.7% hypo- 4.7%	hyper -1% hypo- 4%	hyper- 1.2% hypo- 8.3%
nephritis	< 1%	1%	0.7%
neuropathy	0.2%	< 1%	< 1%

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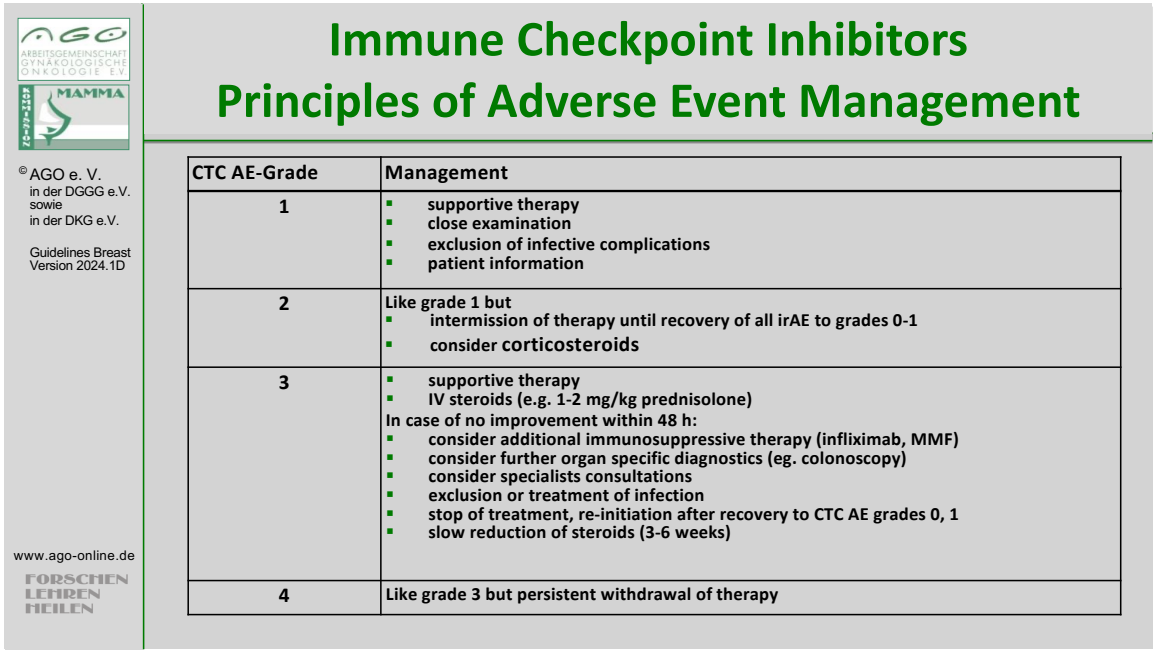

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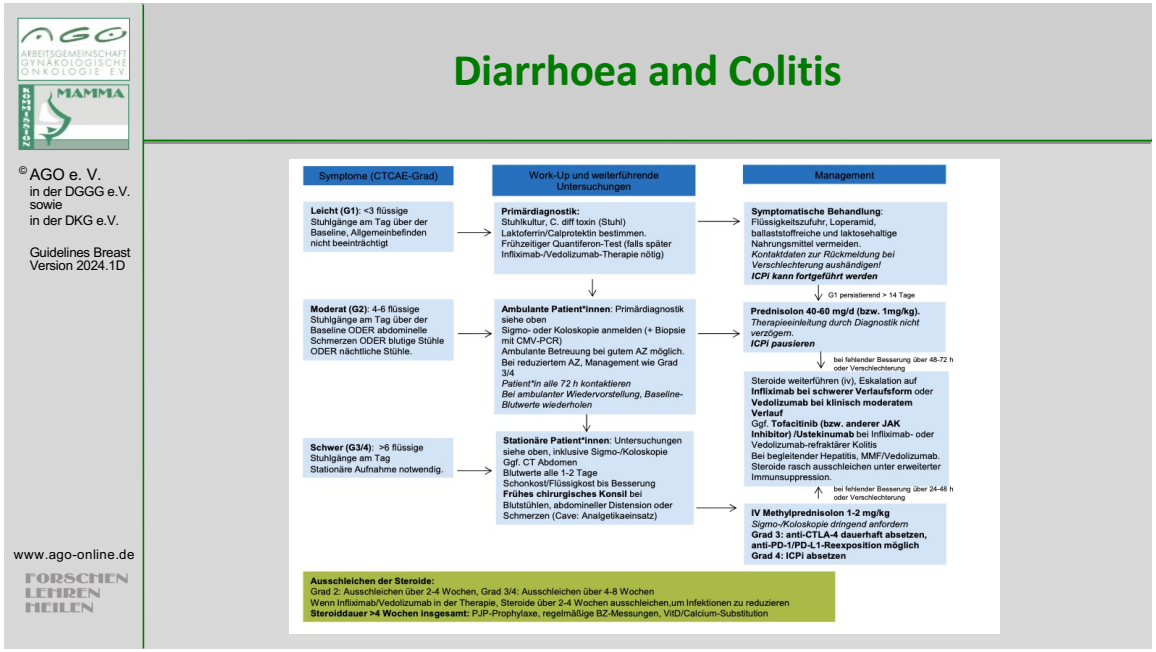

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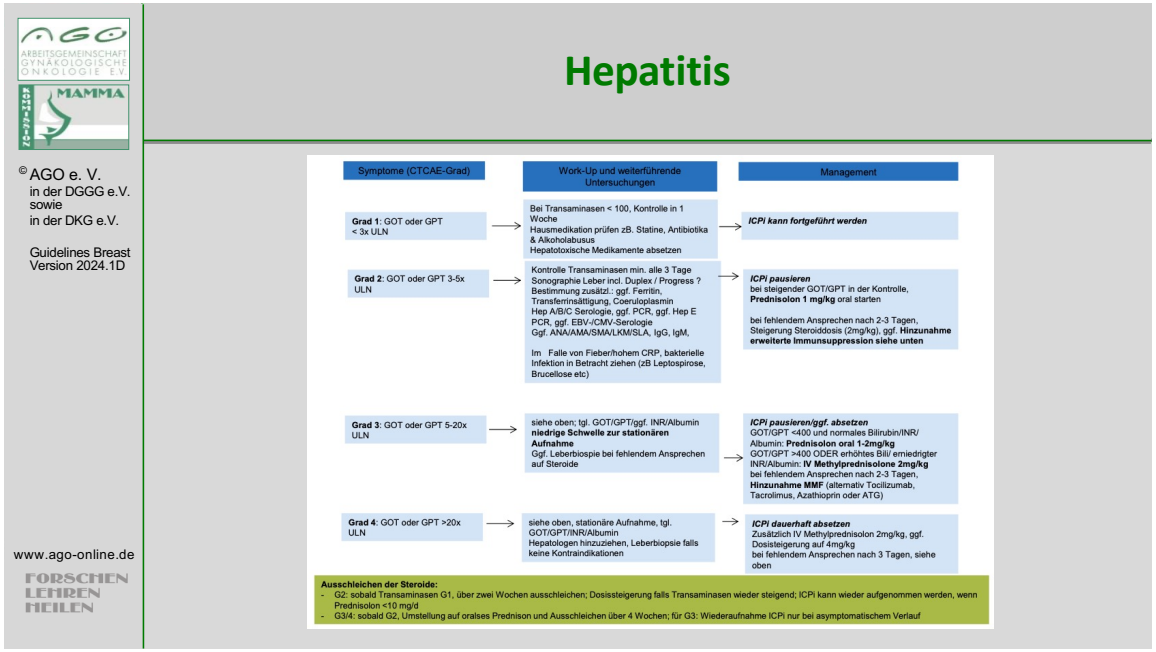

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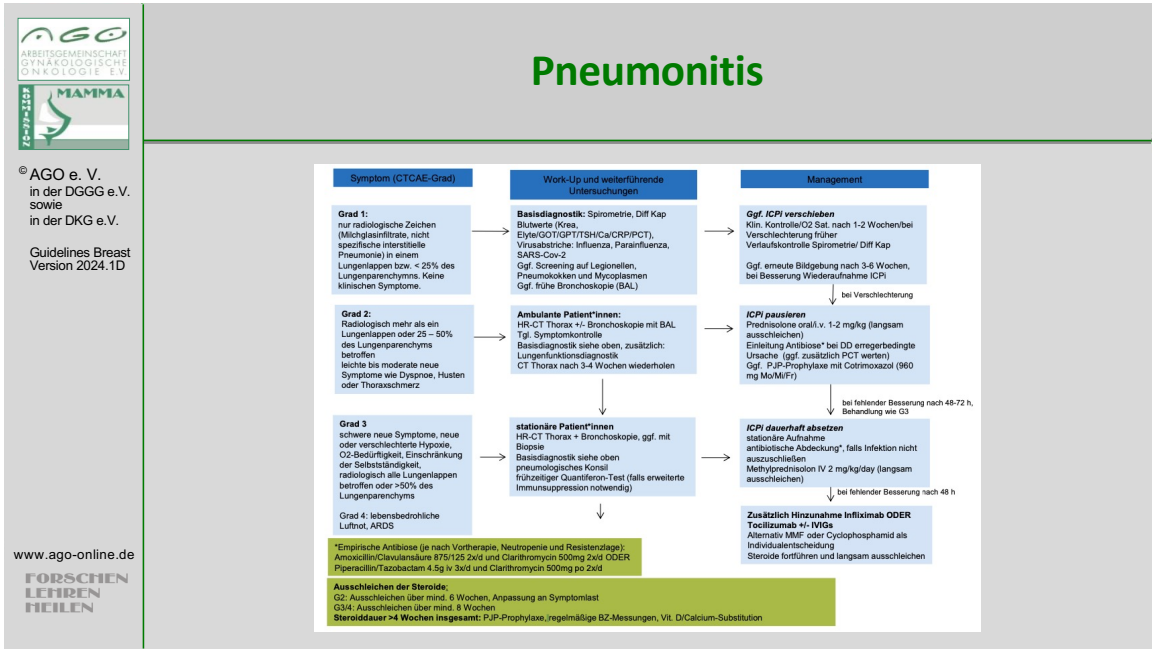

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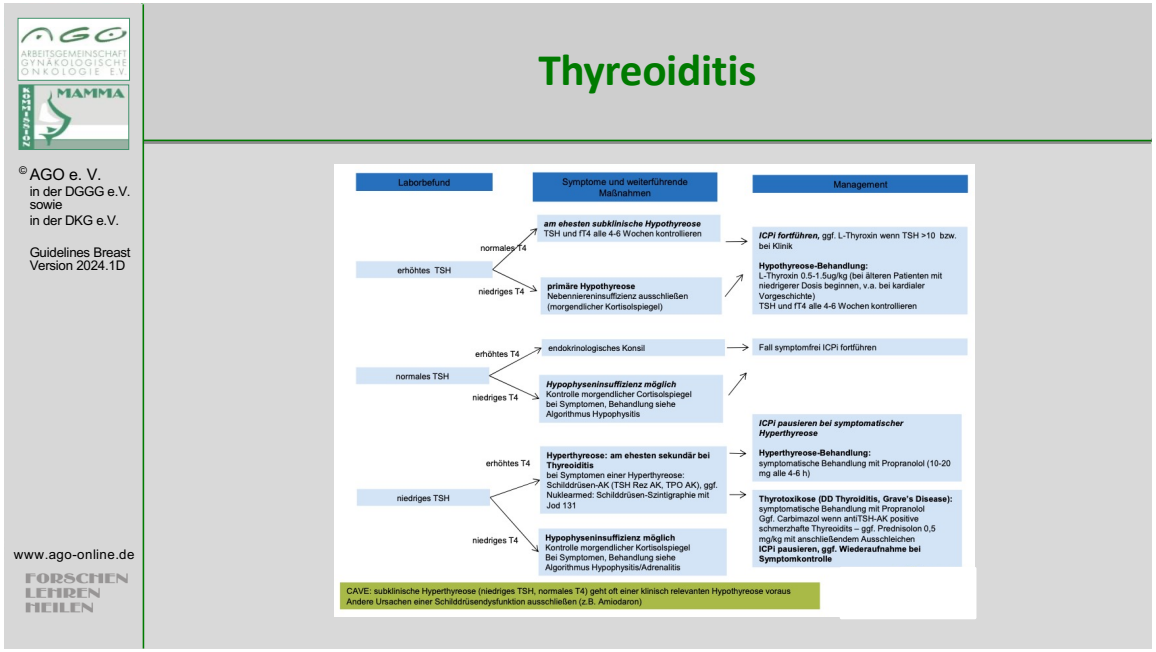

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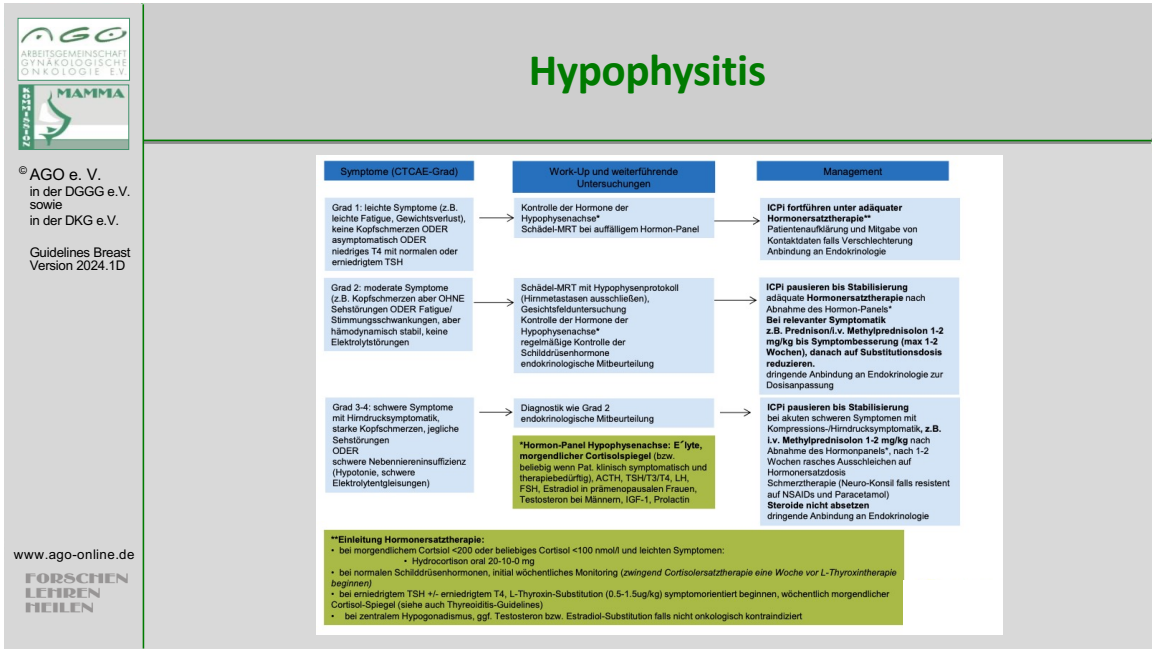

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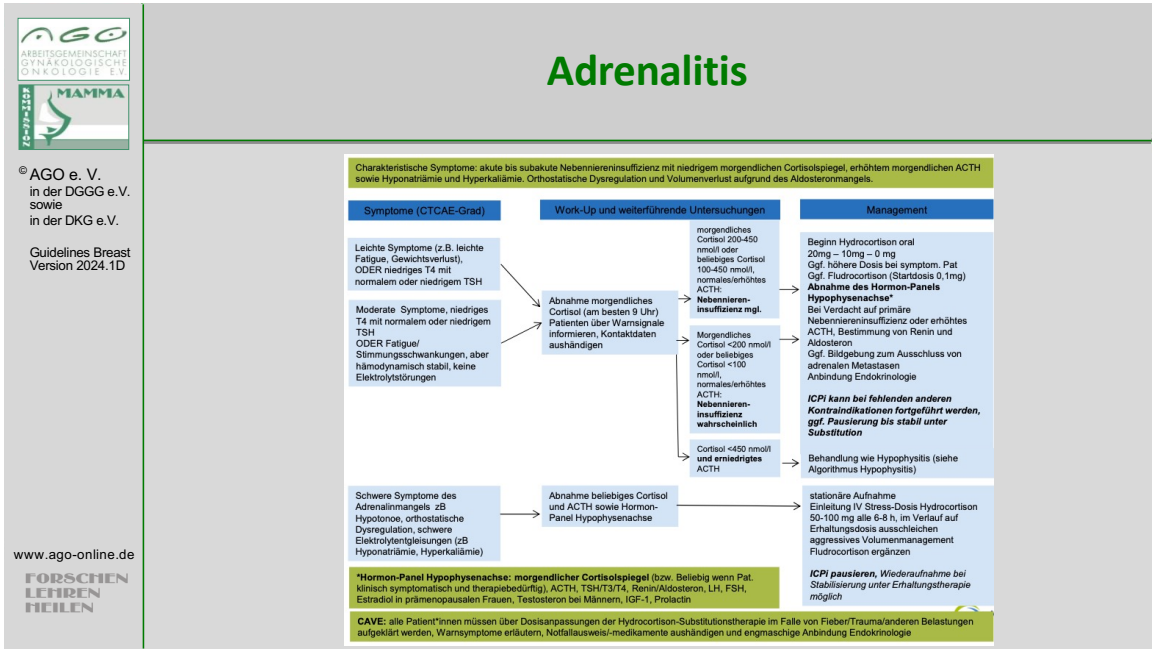

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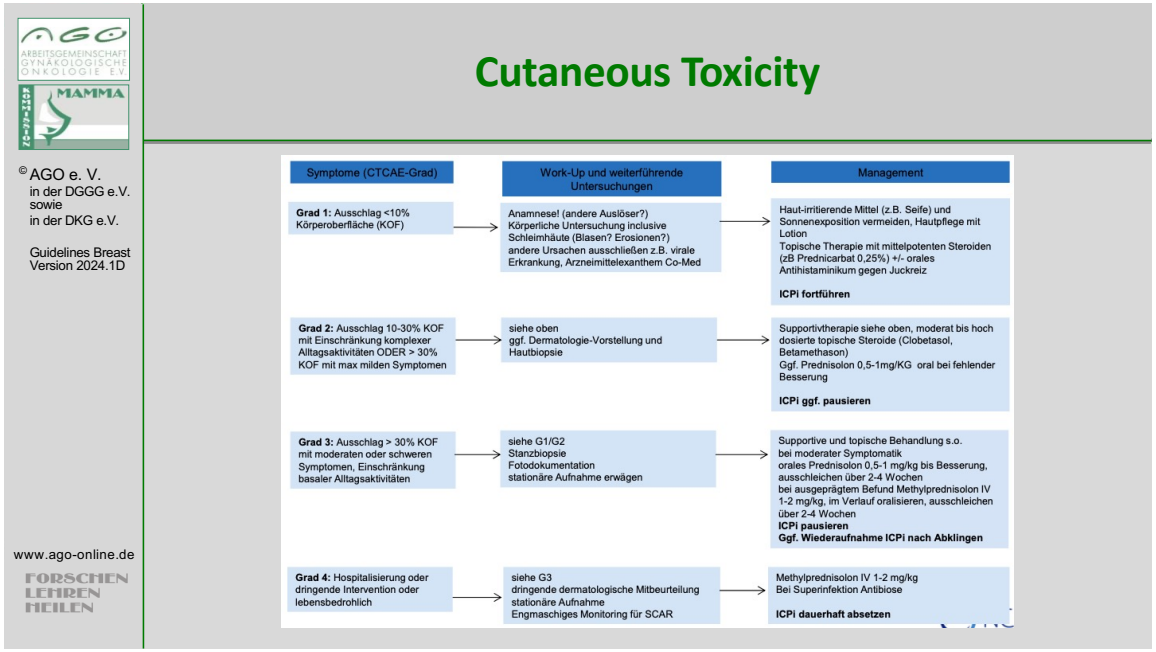

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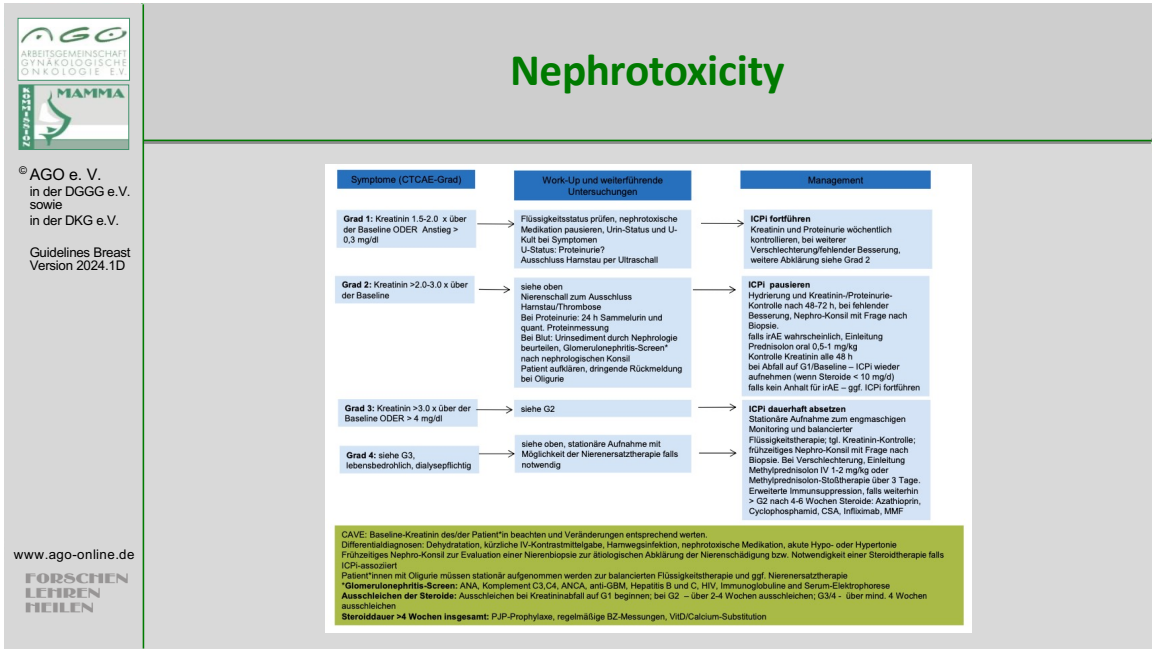

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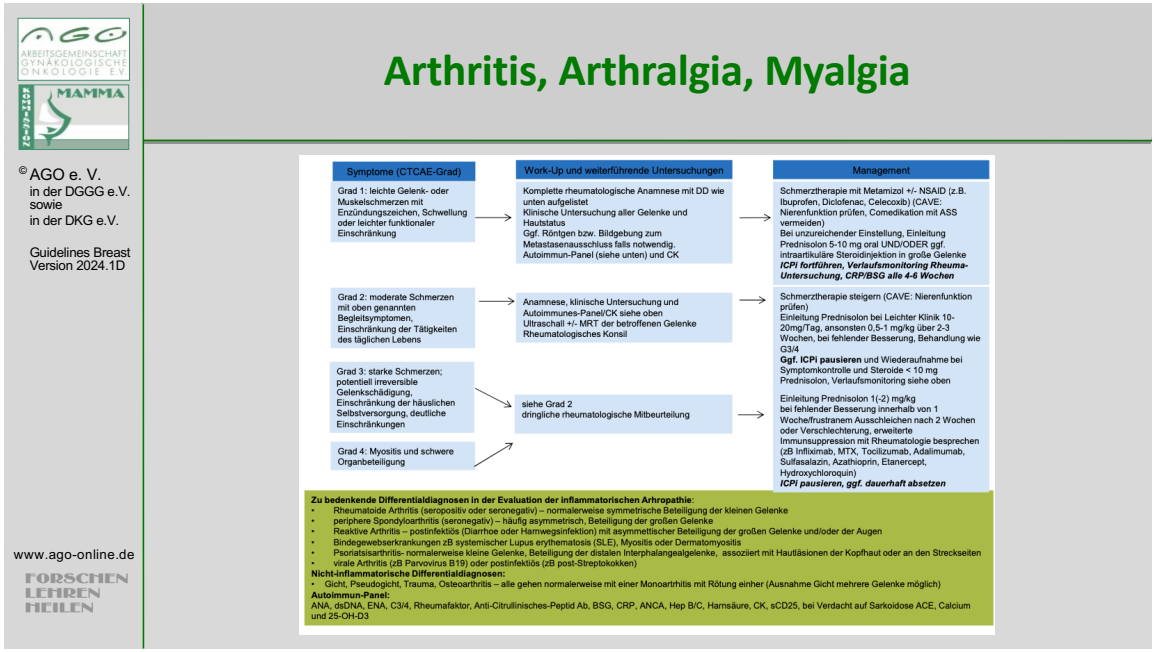

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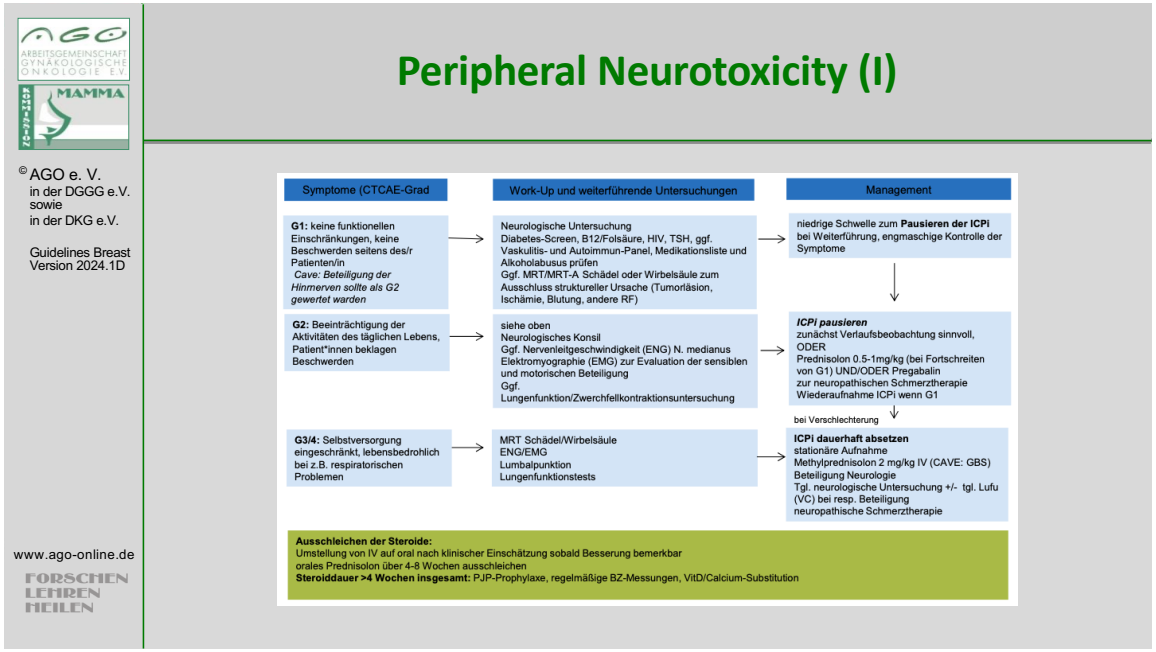

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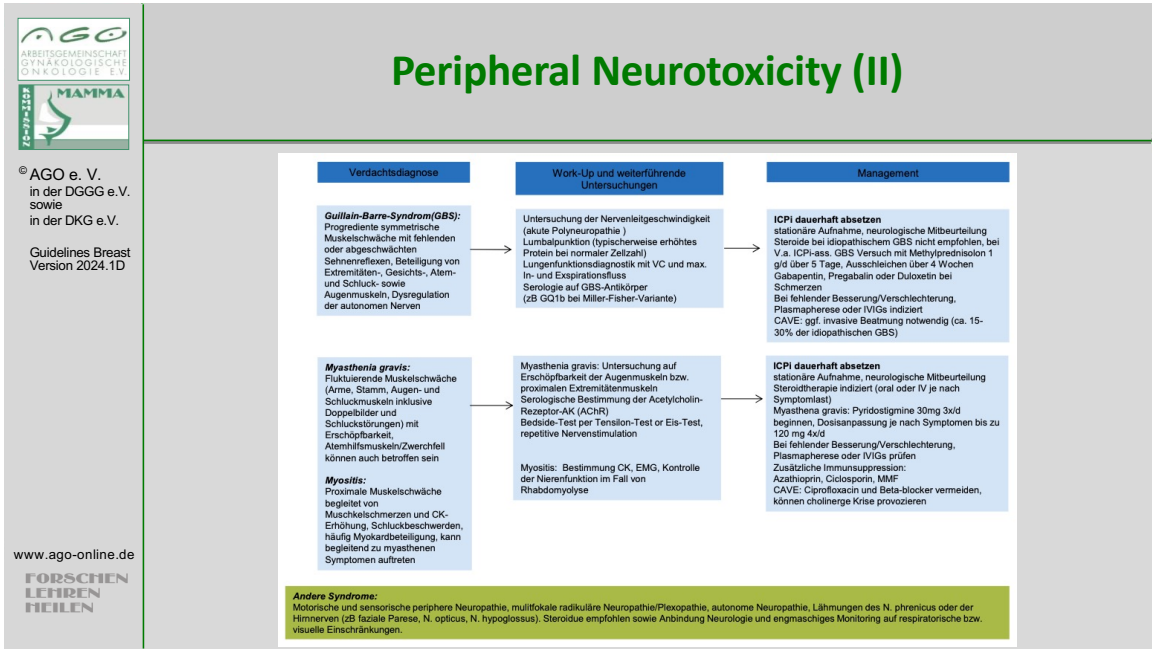

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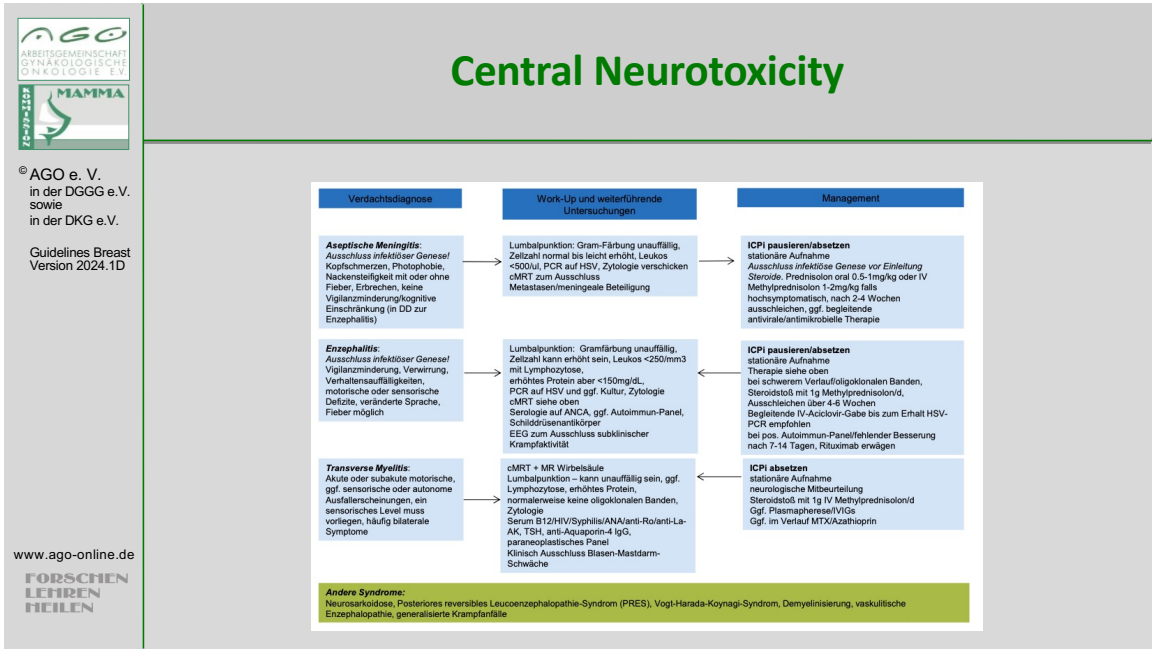

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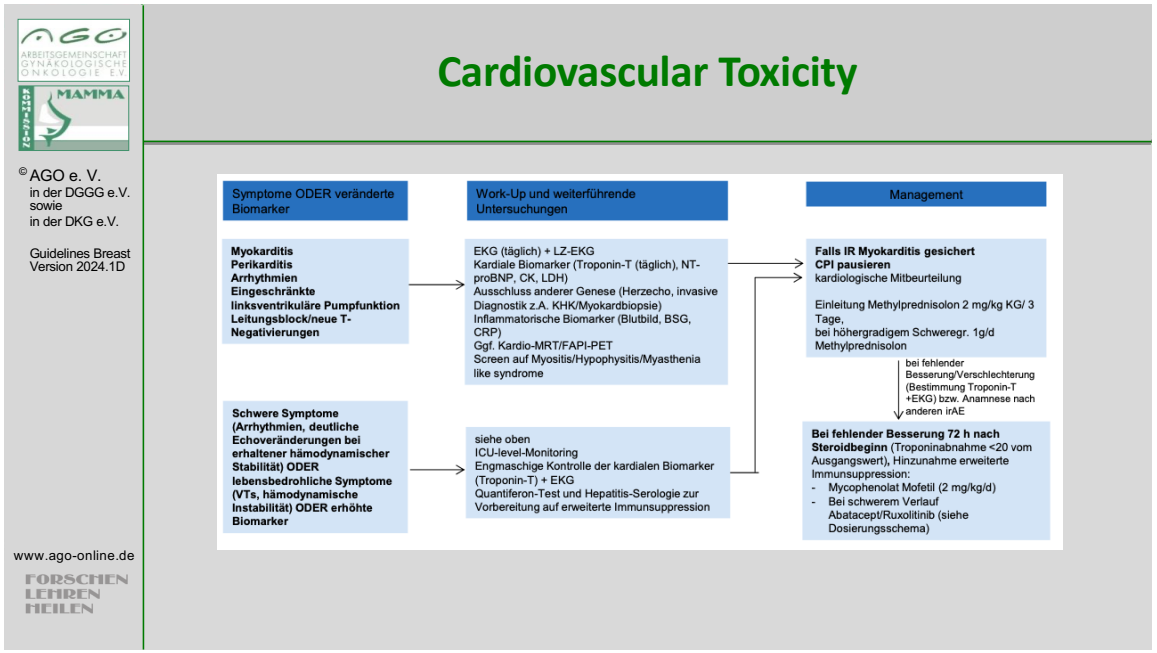

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Guidelines Breast
Version 2024.1D

Nebenwirkungen nach Organsystemen

Inzidenz, Prävention, Therapie

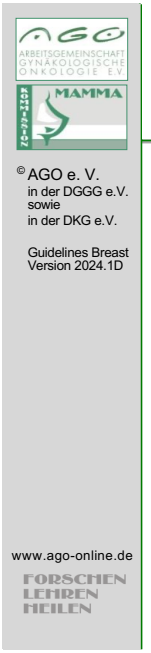
1. Infektionen

Allgemeine Infektionsprophylaxe

Hepatitis B-Screening

Covid-19 (s. gemeinsame Stellungnahme mit DGHO)

1. Hwang JP, Feld JJ, Hammond SP, et al. Hepatitis B Virus Screening and Management for Patients With Cancer Prior to Therapy: ASCO Provisional Clinical Opinion Update. J Clin Oncol 2020;38:3698-3715.
2. Giesen N, Sprute R, Rüthrich M et al. 2021 update of the AGIHO guideline on evidence-based management of COVID-19 in patients with cancer regarding diagnostics, viral shedding, vaccination and therapy. COVID-19 guideline panel of the Infectious Diseases Working Party (AGIHO) of the German Society for Haematology and Medical Oncology (DGHO). Eur J Cancer. 2021 Apr;147:154-160.



Allgemeine Infektionsprophylaxe

NB nur selten für solide Tumoren wie MaCa anwendbar

ASCO Practice Guideline „Antimicrobial Prophylaxis...“ 2018

	Oxford		
	LoE	GR	AGO
Vermeidung von besonders infektions-begünstigenden Faktoren / Umgebungen	5	D	+
Überprüfung und ggf. Aktualisierung des Impfstatus vor Beginn der Therapie gemäß RKI, STIKO, DGHO	5	D	+
Prophylaktische Therapie in Low-Risk-Patienten	1a	B	-
Prophylaktische Therapie bei Hochrisikopatienten* (z. B. gemäß NCCN-Leitlinien) mit:			
Antibiotika	1a	A	++
Antimykotika (Triazol-Antimykotika)	1a	B	+/-
Virostatika bei soliden Tumoren	5	D	-
Granulopoese-stimulierende Faktoren	1a	A	++

* Definition Hochrisiko: vermutete Neutropeniedauer < 100/µl ≥ 7d

ASCO:

1. Taplitz RA, Kennedy EB, Bow EJ, et al. Antimicrobial Prophylaxis for Adult Patients With Cancer-Related Immunosuppression: ASCO and IDSA Clinical Practice Guideline Update. J Clin Oncol 2018;36:3043-3054.
2. Taplitz RA, Kennedy EB, Bow EJ, et al. Outpatient Management of Fever and Neutropenia in Adults Treated for Malignancy: American Society of Clinical Oncology and Infectious Diseases Society of America Clinical Practice Guideline Update. J Clin Oncol 2018;36:1443-1453.

NCCN:

1. NCCN Guidelines Version 1.2021 Prevention and Treatment of Cancer-Related Infections. https://www.nccn.org/professionals/physician_gls/PDF/infections.pdf

RKI:

1. Laws, Baumann, Bogdan et al., Impfen bei Immundefizienz; Anwendungshinweise zu den von der Ständigen Impfkommission empfohlenen Impfungen. (III) Impfen bei hämatologischen und onkologischen Erkrankungen (antineoplastische Therapie, Stammzelltransplantation), Organtransplantation und Asplenie. Bundesgesundheitsbl 2020 · 63:588–644 https://doi.org/10.1007/s00103-020-03123-w

www.onkopedia.de

Guidelines Breast
Version 2024.1D

Hepatitis B-Screening vor Chemotherapie

	Oxford		
	LoE	GR	AGO
Hepatitis B-Screening vor Beginn einer Chemotherapie (HBsAg, anti-HBc, anti-HBs)	2c	B	+
Bei Reaktivierung bzw. bei positiver Serologie			
Prophylaktische Therapie mit Virustatika bei Nachweis von HBV-DNA (entsprechend AGIHO / DGHO – Empfehlungen)	1b	A	++
Hepatitis C-Screening vor Beginn einer Chemotherapie	5	D	+/-

1. Sandherr M, Hentrich M, von Lilienfeld-Toal M, et al. Antiviral prophylaxis in patients with solid tumours and haematological malignancies--update of the Guidelines of the Infectious Diseases Working Party (AGIHO) of the German Society for Hematology and Medical Oncology (DGHO). Ann Hematol. 2015 Sep;94(9):1441-50.
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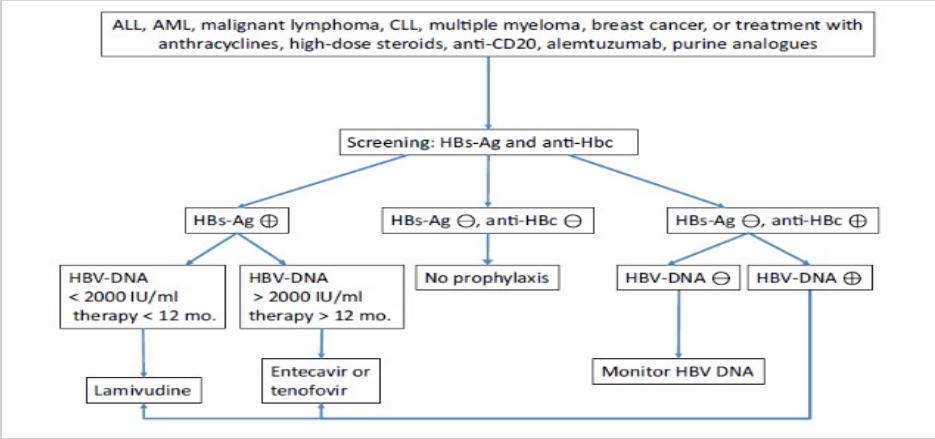
AGIHO / DGHO – Recommendations on Hepatitis B Virus Screening in Oncology



Sandherr M et al. Ann Hematol. 2015 Sep;94(9):1441-50

Guidelines Breast
Version 2024.1D

1. Sandherr M, Hentrich M, von Lilienfeld-Toal M, et al. Antiviral prophylaxis in patients with solid tumours and haematological malignancies--update of the Guidelines of the Infectious Diseases Working Party (AGIHO) of the German Society for Hematology and Medical Oncology (DGHO). Ann Hematol. 2015 Sep;94(9):1441-50.
2. Maschmeyer G, De Greef J, Mellinghoff SC et al.: European Conference on Infections in L: Infections associated with immunotherapeutic and molecular targeted agents in hematology and oncology. A position paper by the european conference on infections in leukemia (ecil). Leukemia 2019;33:844-862.

Guidelines Breast
Version 2024.1D

Nebenwirkungen nach Organsystemen

Inzidenz, Prävention, Therapie

2. Gutartige, bösartige und nicht spezifizierte Neubildungen (einschl. Zysten und Polypen)

Sekundäre Malignome I

	Oxford LoE	Oxford GR
▪ Die Induktion von soliden, malignen Tumoren durch Chemotherapie ist selten		2a
▪ Alkylantien erhöhen dosisabhängig das Risiko für Leukämien auf 0,2–0,4 % innerhalb von 10–15 Jahren		2a
▪ Anthrazyklinhaltige Regime erhöhen das Risiko für MDS und Leukämie auf 0,2–1,7 % innerhalb von 8–10 Jahren		2a
▪ PARP-Inihibitoren sind assoziiert mit einem erhöhten Risiko für AML und MDS von 0,5–1 %		2b
▪ Radiotherapie erhöht das Risiko einer Leukämie bei Pat. mit einer anthrazyklinhaltigen Therapie um 0,2–0,4 %		2b
▪ Tamoxifen verdoppelt das Risiko für die Entwicklung eines Endometriumkarzinoms (bei Therapiebeginn ab 55. Lj.)		2b

Statements 1-5

1. Schaapveld M, Visser O, Louweman M et al.(2008) Risk of primary non breast cancers after breast cancer treatment: a dutch population-based study. J Clin Oncol 26: 1239-46.
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Tamoxifen and endometrial cancer

1. Early Breast Cancer Trialists' Collaborative Group (EBCTCG), Davies C, Godwin J, et al. Relevance of breast cancer hormone receptors and other factors to the efficacy of adjuvant tamoxifen: patient-level meta-analysis of randomised trials. Lancet. 2011 Aug 27;378(9793):771-84.
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Sekundäre Malignome II (nach Radiotherapie)

	Oxford LoE
Eine Radiotherapie (PMRT, BET) kann das Risiko für ein ipsilaterales Lungenkarzinom und Angiosarkom mäßiggradig anheben (10–15/10.000) (Auftreten 5–10 Jahre nach PMRT)	**1a**
Erhöhtes Risiko besonders für Raucher	**2b**
Kein Unterschied bezgl. sekundärer Malignome zwischen PBI (Teil-) und WBI (Ganzbrustbestrahlung)	**2c**

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Nebenwirkungen nach Organsystemen

Inzidenz, Prävention, Therapie

3. Erkrankungen des Blutes und des Lymphsystems

- Anämie
- Neutropenie
- Febrile Neutropenie

Anämie – Indikationen für den Einsatz von Erythropoese-stimulierenden Faktoren (ESF)

	Oxford		
	LoE	GR	AGO
▪ Indiziert bei asymptomatischer Anämie	1a	B	-
▪ Therapie und sekundäre Prophylaxe bei CTx-induzierter Anämie	1a	A	+
▪ Adjuvante Situation	1b	A	+
▪ Neoadjuvante / metastasierte Situation	1a	A	+/-
▪ Bei dosisdichter / dosiseskalierter CTx (iddETC)	1b	A	+
Therapie beginnt bei Hb-Werten < 10 g/dl	1a	A	+
Ziel-Hb 11–12 g/dL	1a	A	+
Verbesserung der Prognose (krankheitsfreies Intervall, Gesamtüberleben)	1a	B	--
ESF erhöht das Risiko von thromboembolischen Komplikationen	1a	A	

Leitlinie:

Leitlinienprogramm Onkologie (Deutsche Krebsgesellschaft, Deutsche Krebshilfe, AWMF): Supportive Therapie bei onkologischen PatientInnen - Langversion 1.3, 2020, AWMF Registernummer: 032/054OL

1. Bohlius J, Bohlke K, Castelli R, et al: Management of cancer-associated anemia with erythropoiesis-stimulating agents: Asco/ash clinical practice guideline update. J Clin Oncol 2019;37:1336-1351.
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Relevante Leitlinien

1. NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines): Cancer- and Chemotherapy-Induced Anemia. Version 2.2018 (https://www.nccn.org/professionals/physician_gls/pdf/anemia.pdf)
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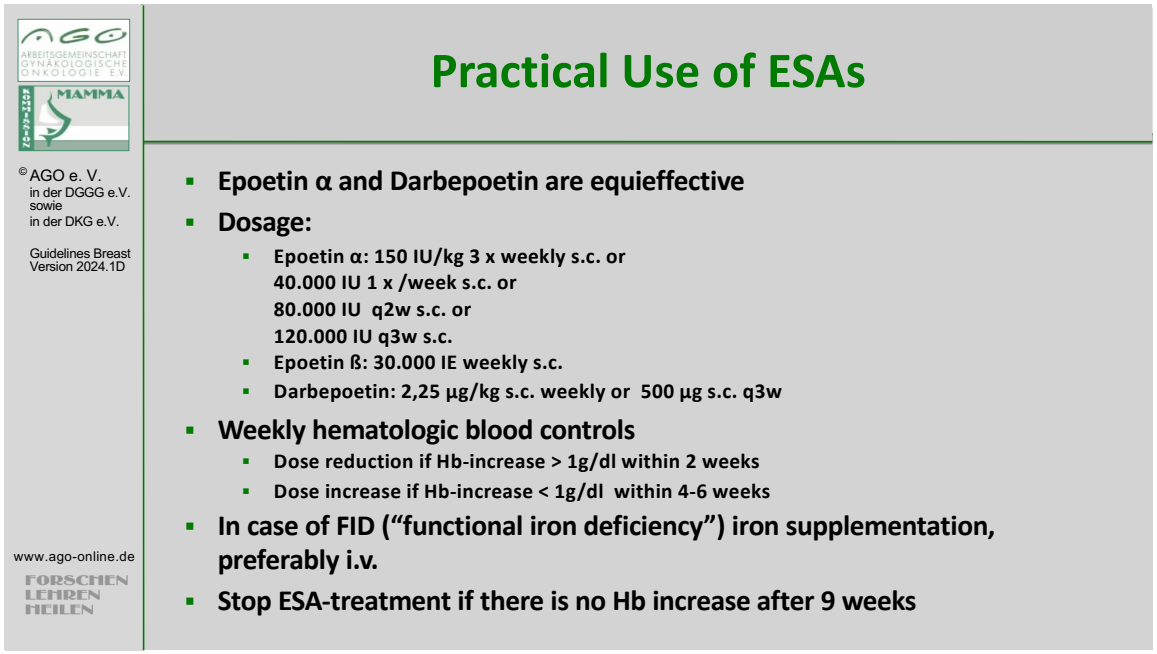

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<u>Relevant guidelines</u>

1. NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines): Hematopoietic growth factors. Version 1.2022 (https://www.nccn.org/professionals/physician_gls/pdf/growthfactors.pdf)

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5. ESMO guideline. Supportive and palliative Care. https://www.esmo.org/guidelines/guidelines-by-topic/supportive-and-palliative-care?

Granulozyten-Kolonie-stimulierende Faktoren

	Oxford		
	LoE	GR	AGO
Primäre Prophylaxe für eine zu erwartende febrile Neutropenie (FN)			
Bei Risiko für FN 10–20 %	1b	B	+/-
Im Falle zusätzlicher individueller Risiken	3b	C	+
Bei FN-Risiko > 20 % (e.g. DAC, dosisdichte CT)	1a	A	++
Sekundäre Prophylaxe während der Chemotherapie (frühere FN oder Neutropenie Grad IV > 7 Tage)	1b	A	++
Therapeutischer Nutzen bei FN	1a	A	+/-
Beginn der Therapie in Verbindung mit Art und Dauer der Chemotherapie			
Pegfilgrastim Tag 2	1b	A	++
Lipegfilgrastim Tag 2	1b	A	++
Filgrastim / Lenograstim von Tag 2–5 bis absolute Neutrophilenzahl > 2–3 x 10^9	1b	A	++

Relevante Leitlinien

1. S3-Leitlinie: Supportive Therapie:
   Leitlinienprogramm Onkologie (Deutsche Krebsgesellschaft, Deutsche Krebshilfe, AWMF): Supportive Therapie bei onkologischen PatientInnen - Langversion 1.3 – Februar 2020
2. NCCN Guidelines 1.2022
3. Smith TJ, Bohlke K, Lyman GH, et al.: American Society of Clinical Oncology. Recommendations for the Use of WBC Growth Factors: American Society of Clinical Oncology Clinical Practice Guideline Update. J Clin Oncol 2015 Oct 1;33(28):3199-212.
4. ESMO guideline. Supportive and palliative Care. https://www.esmo.org/guidelines/guidelines-by-topic/supportive-and-palliative-care?

Statements 1-4

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cancer survival: a systematic review and meta-analysis of randomized controlled trials. Ann Oncol 2013, 24: 2475-2484.
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Management der febrilen Neutropenie

Arbeitsgemeinschaft Infektionen in der Hämatologie und Onkologie (AGIHO)
der Deutschen Gesellschaft für Hämatologie und Onkologie e.V. (DGHO) www.dgho-infektionen.de

Definition (orale Temp. > 38,5 °C oder zwei konsekutive Messungen > 38 °C über 2 h in einer Patientin mit einem ANC < 500 cells/mm³ oder erwarteter Abfall < 500 cells/mm³)

	Oxford		
	LoE	GR	AGO
Klinische Untersuchung	5	D	++
Tägliche Kontrollen	5	D	++
Hospitalisierung von Hochrisikopatienten	1b	A	++
Ambulante Therapie bei Niedrigrisikopat. möglich	1b	A	+
Differentialblutbild	5	D	++
Blutkulturen	5	D	++
Bildgebung der Lunge	3	C	++
Sofortige empirische antibiot. Therapie	1a	A	++
Empirische antimykotische Therapie nach 4–7 d bei keiner Besserung unter der antibiotischen Therapie	1b	A	++
G-CSF als therapeutische Maßnahme	2b	B	+/-

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S3-Leitlinie: Supportive Therapie:

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   Leitlinienprogramm Onkologie (Deutsche Krebsgesellschaft, Deutsche Krebshilfe, AWMF): Supportive Therapie bei onkologischen PatientInnen - Langversion 1.3 – Februar 2020
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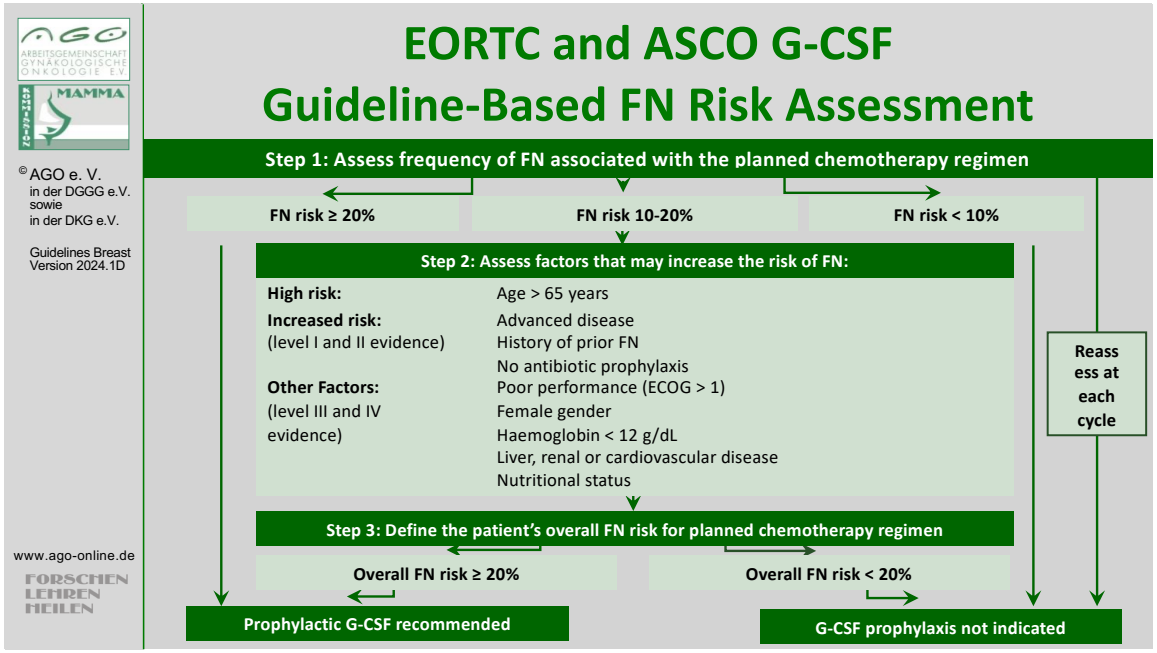
3. ESMO guideline. Supportive and palliative Care. https://www.esmo.org/guidelines/guidelines-by-topic/supportive-and-palliative-care?



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4. Nebenwirkungen am Ovar

Therapie-assoziierte Amenorrhoe (CRA, CIA, TIA)	Oxford LoE
Eine CRA kann dauerhaft oder vorübergehend sein (abhängig vom Alter der Pat. und der Art der Chemotherapie)	2b
Das Risiko der CRA steigt mit dem Alter / Therapiedauer	2b
CRA ist ein (unsicherer) Surrogatmarker für Menopause und Fertilität	5
Eine adjuvante endokrine Therapie mit einem GnRHa induziert eine reversible Amenorrhoe, und verschiebt eine Konzeption in eine weniger fertile Phase	5
Die Ovarialreserve der nach Chemotherapie prämenopausal gebliebenen Frauen ist reduziert	2b
CRA ist mit einer verbesserten Prognose (DFS / OS) assoziiert	1b

Synonyma: Chemotherapie / Therapie-induzierte Amenorhoe (TIA/CIA)

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Nebenwirkungen nach Organsystemen

Inzidenz, Prävention, Therapie

5. Psychiatrische Erkrankungen

- Depression
- Fatigue
- Kognitive Störungen
- Schlafstörungen

(Therapie-assoziierte) Depression

	Oxford LoE	Oxford GR	Oxford AGO
Depressive Episoden bei 20–30 % der Mammakarzinompatientinnen	2a	B	
Psychosoziale Interventionen verbessern Depression, allerdings ohne günstige Auswirkungen auf Mortalität	1b	A	
Antidepressiva können Depression bei Brustkrebspatientinnen verbessern	1b	A	
Körperliches Training kann Depression bei Brustkrebspatientinnen verhindern	2b	B	+

Statements 1-4

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Guidelines Breast
Version 2024.1D

(Therapie-assoziierte) Fatigue

	Oxford		
	LoE	GR	AGO
Fatigue häufiges Symptom bei Brustkrebspatientinnen (30–60 %)	2a	B	
Ausschluss anderer Ursachen (Anämie, Tumorausdehnung, Begleiterkrankungen, Medikamente) für Fatigue	1a	A	++
Gezielte psychosoziale Interventionen können Fatigue lindern	1a	A	++
Körperliches Training kann Fatigue verbessern	1b	D	+
Yoga kann Fatigue verbessern	2b	B	+
Methylphenidate oder Kortikosteroide (Kurzzeit-Gabe) können Fatigue verbessern	1a	D	+

Guideline:

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Fatigue is frequently present…

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<u>Psycho-social interventions…</u>

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Physical exercise…..

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Methylphenidate…

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(Therapie-assoziierte) Kognitive Störungen

	Oxford LoE	Oxford GR
Therapiebedingte kognitive Störungen (sog. „Chemobrain“) häufig beschrieben (16–75 %)	2a	B
Verhaltenstherapie kann kognitive Funktion verbessern	2b	B
Methylphenidate kann kognitive Funktion bei Patientinnen mit Krebs verbessern	3a	C
Unter Aromatasehemmertherapie wurden kognitive Störungen beobachtet (insbes. Wortgedächtnis)	1a	B

Therapiebedingte kognitive Störungen (sog. „Chemobrain“) häufig beschrieben

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<u>Verhaltenstherapie kann kognitive Funktion verbessern</u>

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Methylphenidate kann kognitive Funktion bei Patientinnen mit Krebs verbessern

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(Therapie-assoziierte) Schlafstörungen

	Oxford		
	LoE	GR	AGO
Schlafstörungen häufig bei Mammakarzinom-patientinnen während und nach Therapie beschrieben (20–70 %)	2a	B	
Verhaltenstherapie ist effektiv in der Behandlung von Schlafstörungen und Steigerung der Lebensqualität	1b	A	++

Sleep disturbances are a common problem….

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Guidelines Breast
Version 2024.1D

Nebenwirkungen nach Organsystemen

Inzidenz, Prävention, Therapie

6. Erkrankungen des Nervensystems

Chemotherapie induzierte periphere Neuropathie (CIPN)

Chemotherapie-induzierte periphere Neuropathie (CIPN)

Inzidenz Grad 1–2 nach Taxanen 20–50 %

Inzidenz Grad 3–4 nach Taxanen 6–20 %

Risikofaktoren: Art der Chemotherapie, Dosierung, BMI, fehlende körperliche Aktivität

Individuelle Risikofaktoren

- **Diabetes mellitus**
- **Nutritiv toxische Substanzen ins. Alkohol**
- **Niereninsuffizienz**
- **Hypothyreose**
- **Kollagenosen / Vaskulitiden**
- **Vitaminmangel**
- **HIV-Infektion**
- **CMT-Genmutation**

Unklar:

- **Andere genetische Faktoren (SNP, Mutationen)**

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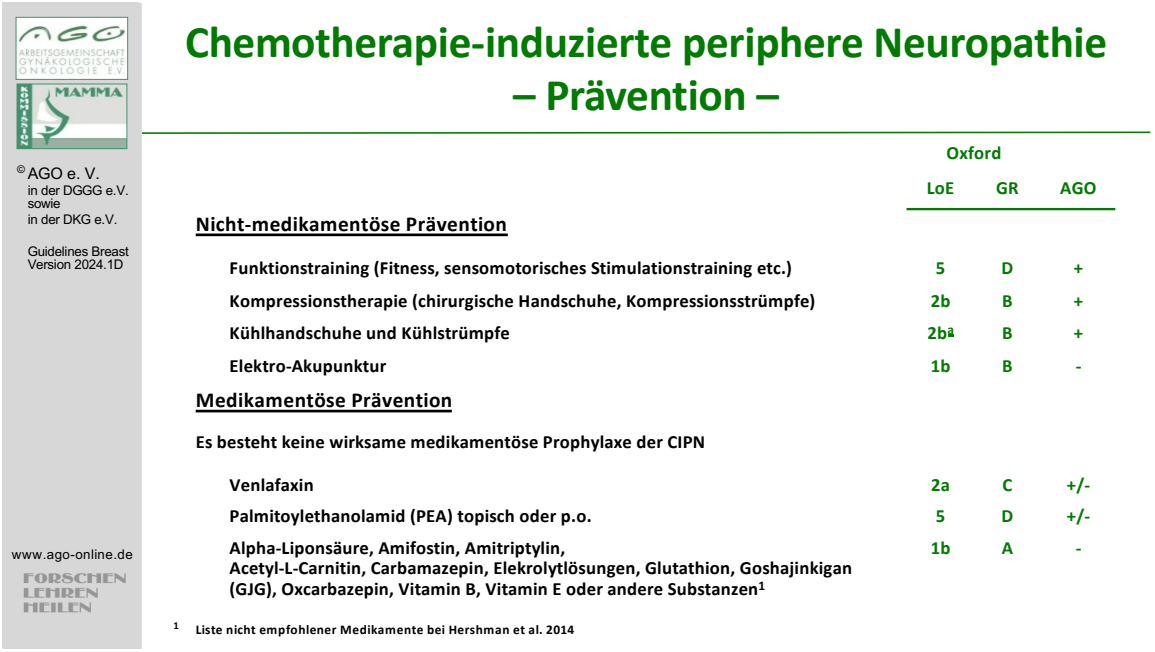

Chemotherapie-induzierte periphere Neuropathie – Prävention –

	Oxford LoE	Oxford GR	AGO
Nicht-medikamentöse Prävention			
Funktionstraining (Fitness, sensomotorisches Stimulationstraining etc.)	5	D	+
Kompressionstherapie (chirurgische Handschuhe, Kompressionsstrümpfe)	2b	B	+
Kühlhandschuhe und Kühlstrümpfe	2b[a]	B	+
Elektro-Akupunktur	1b	B	-
Medikamentöse Prävention			
Es besteht keine wirksame medikamentöse Prophylaxe der CIPN			
Venlafaxin	2a	C	+/-
Palmitoylethanolamid (PEA) topisch oder p.o.	5	D	+/-
Alpha-Liponsäure, Amifostin, Amitriptylin, Acetyl-L-Carnitin, Carbamazepin, Elekrolytlösungen, Glutathion, Goshajinkigan (GJG), Oxcarbazepin, Vitamin B, Vitamin E oder andere Substanzen[1]	1b	A	-

[1] Liste nicht empfohlener Medikamente bei Hershman et al. 2014

Reviews/Leitlinien

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chemotherapy-induced painful peripheral neuropathy: a randomized clinical trial." JAMA 309(13): 1359-1367.
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<u>Nicht-medikamentöse Prävention</u>

Funktionstraining

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Kompression

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Kühlung

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Akupunktur

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<u>Medikamentöse Prävention</u>

Venlafaxin

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Palmitoylethanolamid (PEA)

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palmitoylethanolamine.
J Pharmacol Exp Ther. 2007 Feb;320(2):599-606
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Verschiedene Substanzen

1. Schloss J, Colosimo M, Vitetta L. Herbal medicines and chemotherapy induced peripheral neuropathy (CIPN): A critical literature review. Crit Rev Food Sci Nutr. 2017 Apr 13;57(6):1107-1118.
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Acetyl-L-Carnitin

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Chemotherapie-induzierte periphere Neuropathie – Therapie –

	Oxford LoE	Oxford GR	AGO
Nicht-medikamentöse Therapie			
Funktionstraining (Fitness, sensomotorisches Stimulationstraining etc.)	2a	C	+
Physiotherapie / physikalische Therapie	5	D	+
Akupunktur	2b	B	+
Medikamentöse Therapie			
Menthol lokal (1 %), Capsaicin / Lidocain lokal	5	D	+
Baclofen / Amitryptilin / Ketamin-Creme	2b	B	+
Duloxetin zur Behandlung von Schmerzen durch CIPN	1b	B	+
Opioide zur Behandlung von Schmerzen durch CIPN	5	D	+
Palmitoylethanolamid (PEA) topisch oder p.o.	5	D	+/-
Venlafaxin	5	D	+/-
Gabapentin, Pregabalin	1b	B	+/-
Amitryptilin / Nortripylin, Imipramin / Desipramin	1b	B	+/-
Acetyl-L-Carnitin, Lamotrigin oder andere Substanzen[1]	1b	B	-

[1] Liste nicht empfohlener Medikamente bei Hershman et al. 2014

Reviews / Leitlinien

1. Hershman DL, Lacchetti C, Dworkin RH, et al.: American Society of Clinical Oncology. Prevention and management of chemotherapy-induced peripheral neuropathy in survivors of adult cancers: American Society of Clinical Oncology clinical practice guideline. J Clin Oncol. 2014 Jun 20;32(18):1941-67.
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Nicht-medikamentöse Therapie

Funktionstraining

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Medikamentöse Therapie

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Akupunktur:

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Amitryptilin/Nortriptylin

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Acetyl-L-Carnitin, Lamotrigin oder andere Substanzen:

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Guidelines Breast
Version 2024.1D

7. Herzerkrankungen

Langzeittoxizität
Kardiotoxizität

	Oxford		
	LoE	GR	AGO
Äquivalente Kardiotoxizität von Doxorubicin und Epirubicin in den empfohlenen Dosierungen (450-500 bzw. 900-1000 mg/m² kum. Dosis)	2b	B	
Weniger Kardiotoxizität nach liposomalem Doxorubicin	1b	B	
Risikofaktoren für Anthrazyklin- oder Trastuzumab-assoziierte Kardiotoxizität	2b	B	
Alter, Übergewicht, Hypertonus, Hypercholesterinämie, vorbestehende Herzerkrankungen (inkl. grenzwertige LVEF), Diabetes mellitus			
Überwachung der Herzfunktion:			
Standardisierte Echokardiographie (LVEF oder SF in %)	3b	C	+
EKG (QT-Intervall)	1a	A	+
Troponin I als Marker für Kardiotoxizität	2b	B	+/-
Betablocker-Prophylaxe während Anthrazyklin-Therapie	2a	B	+/-

Consensus recommendations:

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Statements

"Equivalent cardiotoxicity of doxorubicin and epirubicin at recommended dose levels (450–500 and 900–1000 mg/m² cum. dose, resp.)"
"Liposome encapsulated anthracyclines (doxorubicin) induce less cardiotoxicity"

1. van Dalen EC Different anthracycline derivates for reducing cardiotoxicity in cancer patients. Cochrane Database Syst Rev. 2010 Mar 17;(3):CD005006. Review. Update in: Cochrane Database Syst Rev. 2010;(5):CD005006.

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*"*Trastuzumab-related cardiotoxicity in the elderly: a role for cardiovascular risk factors."

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2. de Azambuja E, Ponde N, Procter M, et al: A pooled analysis of the cardiac events in the trastuzumab adjuvant trials. Breast Cancer Res Treat 2019.
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*"*Monitoring of cardiac function before / during / after treatment: Echocardiography (LVEF or SF in %)"

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Troponin as Early Predictor for Cardiotoxicity

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Betablocker-Prophylaxe

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Statement: Cardiac Monitoring (5 D ++)

Vote result of the AGO recommendation: 100%

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Toxizitätssteigerungen durch Behandlungskombinationen

	Oxford		
	LoE	GR	AGO
Kardiale Toxizität			
Trastuzumab simultan zur Radiotherapie	2b	B	+
Trastuzumab simultan zu Epirubicin	2b	B	+/-
Trastuzumab simultan zu Doxorubicin	2b	B	-
Anthrazykline simultan zur Radiotherapie	2c	C	-
Risiko Lungen- / Brustparenchymfibrosen			
Tamoxifen simultan zu Radiotherapie	3	C	+/-
Chemotherapie simultan zu Radiotherapie	1b	B	-

"Trastuzumab simultaneous to radiotherapy"

1. Halyard MY, Pisansky TM, Dueck AC: Radiotherapy and adjuvant trastuzumab in operable breast cancer: tolerability and adverse event data from the NCCTG Phase III Trial N9831.J Clin Oncol 27: 2638-2644, 2009
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"Trastuzumab simultaneous to epirubicin"

1. Untch M, Muscholl M, Tjulandin S, et al.: First-line trastuzumab plus epirubicin and cyclophosphamide therapy in patients with human epidermal growth factor receptor 2-positive metastatic breast cancer: cardiac safety and efficacy data from the Herceptin, Cyclophosphamide, and Epirubicin (HERCULES) trial. J Clin Oncol. 2010 Mar 20;28(9):1473-80.
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"Trastuzumab simultaneous to doxorubicin"

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"Anthracycline simultaneous to radiotherapy"

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"Tamoxifen simultaneous to radiotherapy"

1. Kraus-Tiefenbacher U, Sfintizky A, Welzel G, et al.: Factors of influence on acute skin toxicity of breast cancer patients treated with standard external beam radiotherapy (EBRT) after breast conserving surgery (BCS). Radiat Oncol. 2012 Dec 18;7(1):217. [Epub ahead of print]
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4. Munshi A, Gupta D. Concurrent versus sequential radiotherapy and tamoxifen in breast cancer - The CONSET trial is launched. Acta Oncol. 2011 Jan;50(1):154-5.

1. Valakh V, Trombetta MG, Werts ED, et al.: Influence of concurrent anastrozole on acute and late side effects of whole breast radiotherapy. Am J Clin Oncol. 2011 Jun;34(3):245-8.
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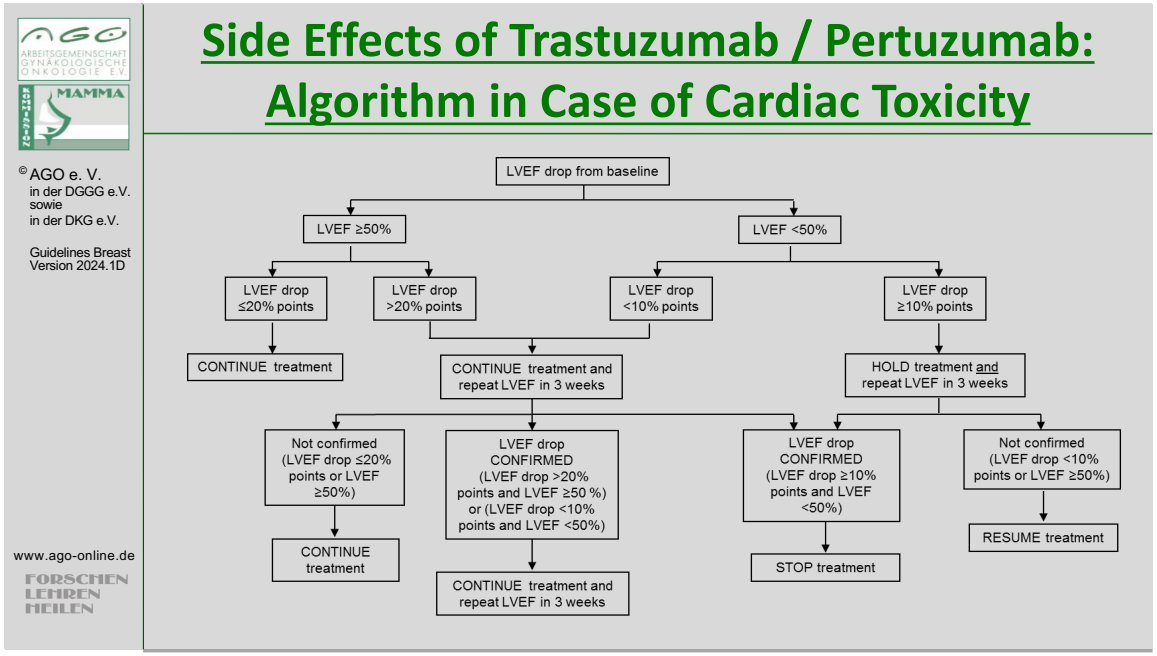

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Nebenwirkungen nach Organsystemen

Inzidenz, Prävention, Therapie

8. Erkrankungen des Gastrointestinaltrakts

- Nausea, Emesis (Übelkeit, Erbrechen)
- Mukositis
  - Stomatitis (Everolimus)
- Diarrhoe
- Obstipation

Antiemetische Therapie

nach MASCC und ASCO

	Oxford		
	LoE	GR	AGO
Abschätzen des emetogenen Potenzials des jeweiligen Therapie-Protokolls (oral, i.v., s.c., i.m.)	5	D	++
Neurokinin-1-Rezeptor-Antagonisten	1b	A	++
Dexamethason (auch bei Kombinationen mit ICPi)	1a	A	++
5-HT_3-Antagonisten	1b	A	++
Feste Kombination mehrerer Substanzen	1b	A	++
Reserveantiemetika (Rescue Medication)			
▪ Olanzapin	1b	A	+
▪ Levomepromazin, Benzodiazepine	3b	C	+
▪ Cannabinoide, Ingwer	3b	C	+/-

ICPi = Immun-Checkpoint Inhibitor

1. Hesketh PJ, Kris MG, Basch E, et al. Antiemetics: American Society of Clinical Oncology Guideline Update. J Clin Oncol 2020;38:2782-2797.
2. Walsh D, Davis M, Ripamonti C, et al. 2016 updated MASCC/ESMO consensus recommendations: Management of nausea and vomiting in advanced cancer. Support Care Cancer 2017;25:333-340.
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with breast cancer. Breast Care 2014;9:246-53
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Olanzapine

1 Slimano F, Netzer F, Borget I et al.: Olanzapine as antiemetic drug in oncology: a retrospective study in non-responders to standard antiemetic therapy. Int J Clin Pharm. 2018 Oct;40(5):1265-1271. doi: 10.1007/s11096-018-0649-1. Epub 2018 May 9.

2 Hashimoto H, Abe M, Tokuyama O, et al. Olanzapine 5 mg plus standard antiemetic therapy for the prevention of chemotherapy-induced nausea and vomiting (J-FORCE): A multicentre, randomised, double-blind, placebo-controlled, phase 3 trial. Lancet Oncol 2020;21:242-249.

Antiemetic Therapy
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FORSCHEN
LEHREN
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ACUTE Nausea and Vomiting: SUMMARY

EMETIC RISK GROUP	ANTIEMETICS
High Non-AC	5-HT$_3$ + DEX + NK$_1$ +/- OLZ*
High AC	5-HT$_3$ + DEX + NK$_1$ +/- OLZ*
Carboplatin	5-HT$_3$ + DEX + NK$_1$
Moderate (other than carboplatin)	5-HT$_3$ + DEX
Low	5-HT$_3$ or DEX or DOP
Minimal	No routine prophylaxis

5-HT$_3$ = serotonin$_3$ receptor antagonist | DEX = DEXAMETHASONE | NK$_1$ = neurokinin$_1$ receptor antagonist such as APREPITANT or FOSAPREPITANT or ROLAPITANT or NEPA (combination of netupitant and palonosetron) | OLZ = OLANZAPINE | DOP = dopamine receptor antagonist

NOTE: If the NK$_1$ receptor antagonist is not available for AC chemotherapy, palonosetron is the preferred 5-HT$_3$ receptor antagonist.

* OLZ: Olanzapine may be added particularly if nausea is a concern.

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DELAYED Nausea and Vomiting: SUMMARY

EMETIC RISK GROUP	ANTIEMETICS
High Non-AC	DEX or (if APR 125mg for acute: (MCP + DEX) or (APR + DEX)) +/- OLZ*
High AC	NONE or (if APR 125mg for acute: DEX or APR) +/- OLZ*
Carboplatin	NONE or (if APR 125mg for acute: APR)
Oxaliplatin, or anthracycline, or cyclophosphamide	DEX can be considered
Moderate (other)	No routine prophylaxis
Low and Minimal	No routine prophylaxis

DEX = DEXAMETHASONE | **MCP** = METOCLOPRAMIDE | **APR** = APREPITANT | **OLZ** = OLANZAPINE

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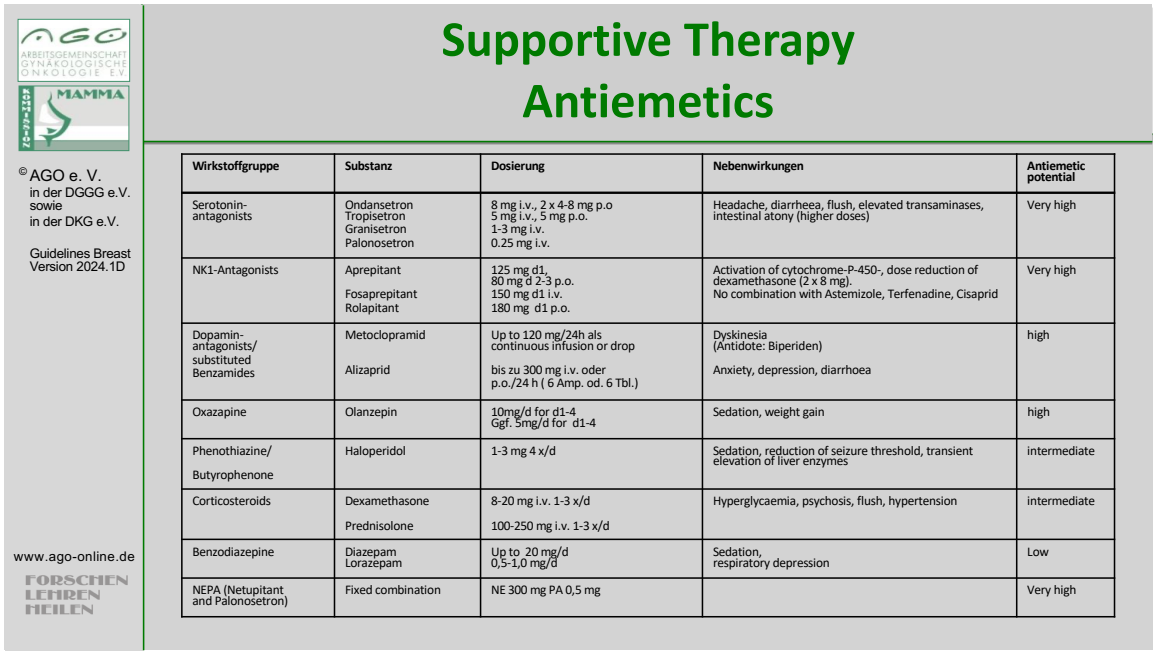

Wirkstoffgruppe	Substanz	Dosierung	Nebenwirkungen	Antiemetic potential
Serotonin-antagonists	Ondansetron Tropisetron Granisetron Palonosetron	8 mg i.v., 2 x 4-8 mg p.o 5 mg i.v., 5 mg p.o. 1-3 mg i.v. 0.25 mg i.v.	Headache, diarrheea, flush, elevated transaminases, intestinal atony (higher doses)	Very high
NK1-Antagonists	Aprepitant Fosaprepitant Rolapitant	125 mg d1, 80 mg d 2-3 p.o. 150 mg d1 i.v. 180 mg d1 p.o.	Activation of cytochrome-P-450-, dose reduction of dexamethasone (2 x 8 mg). No combination with Astemizole, Terfenadine, Cisaprid	Very high
Dopamin-antagonists/ substituted Benzamides	Metoclopramid Alizaprid	Up to 120 mg/24h als continuous infusion or drop bis zu 300 mg i.v. oder p.o./24 h (6 Amp. od. 6 Tbl.)	Dyskinesia (Antidote: Biperiden) Anxiety, depression, diarrhoea	high
Oxazapine	Olanzepin	10mg/d for d1-4 Ggf. 5mg/d for d1-4	Sedation, weight gain	high
Phenothiazine/ Butyrophenone	Haloperidol	1-3 mg 4 x/d	Sedation, reduction of seizure threshold, transient elevation of liver enzymes	intermediate
Corticosteroids	Dexamethasone Prednisolone	8-20 mg i.v. 1-3 x/d 100-250 mg i.v. 1-3 x/d	Hyperglycaemia, psychosis, flush, hypertension	intermediate
Benzodiazepine	Diazepam Lorazepam	Up to 20 mg/d 0,5-1,0 mg/d	Sedation, respiratory depression	Low
NEPA (Netupitant and Palonosetron)	Fixed combination	NE 300 mg PA 0,5 mg		Very high

Olanzapine

1. Slimano F, Netzer F, Borget I et al.Olanzapine as antiemetic drug in oncology: a retrospective study in non-responders to standard antiemetic therapy. Int J Clin Pharm 2018 Oct;40(5):1265-1271. doi: 10.1007/s11096-018-0649-1. Epub 2018 May 9.
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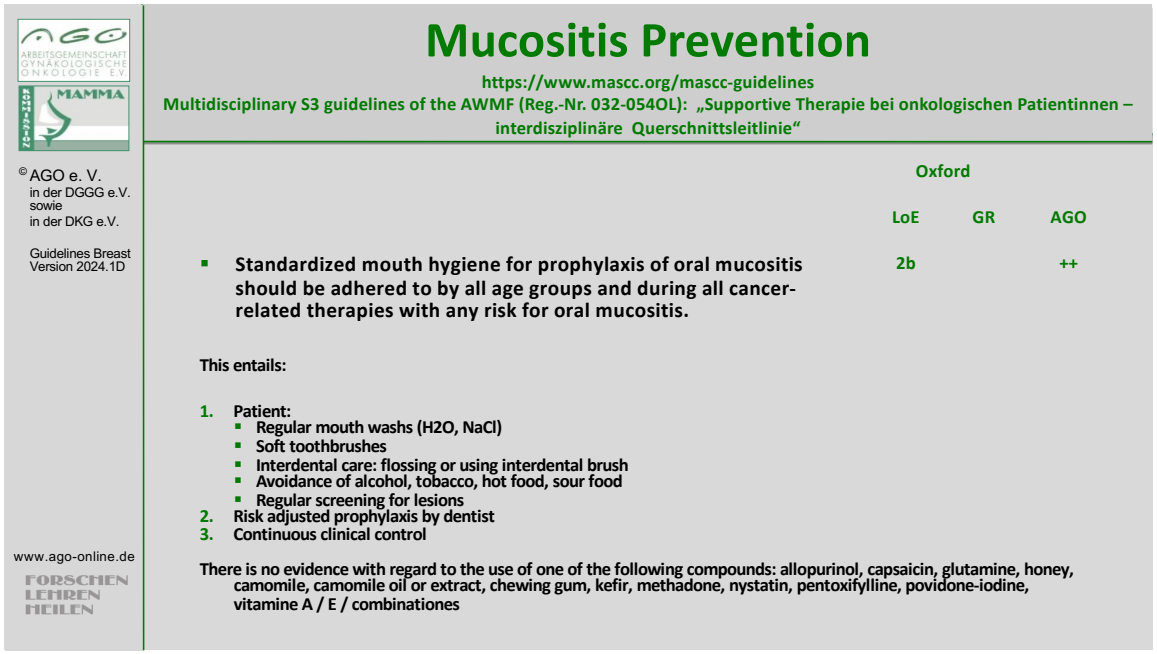

<u>Relevant practice guideline</u>

Leitlinienprogramm Onkologie (Deutsche Krebsgesellschaft, Deutsche Krebshilfe, AWMF): Supportive Therapie bei onkologischen PatientInnen - Langversion 1.3, Februar 2020, AWMF Registernummer: 032/054OL, http://leitlinienprogramm-onkologie.de/Supportive-Therapie.95.0.html (Zugriff am 27.12.2021)

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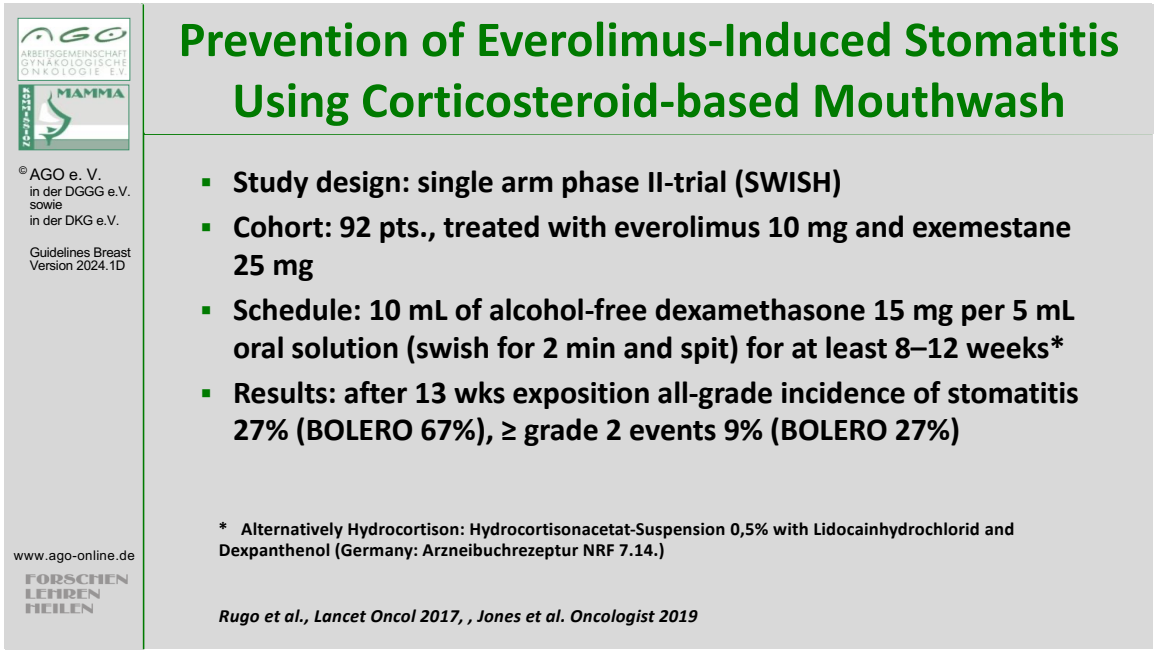

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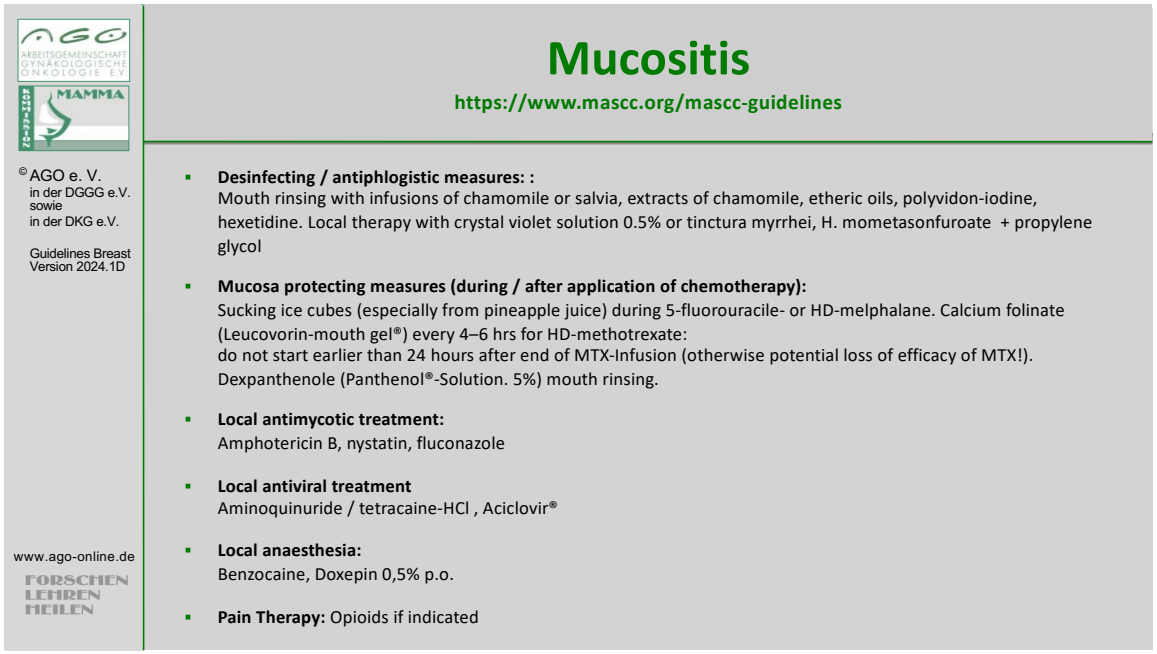

Relevant practice guideline

Leitlinienprogramm Onkologie (Deutsche Krebsgesellschaft, Deutsche Krebshilfe, AWMF): Supportive Therapie bei onkologischen PatientInnen - Langversion 1.3, Februar 2020,

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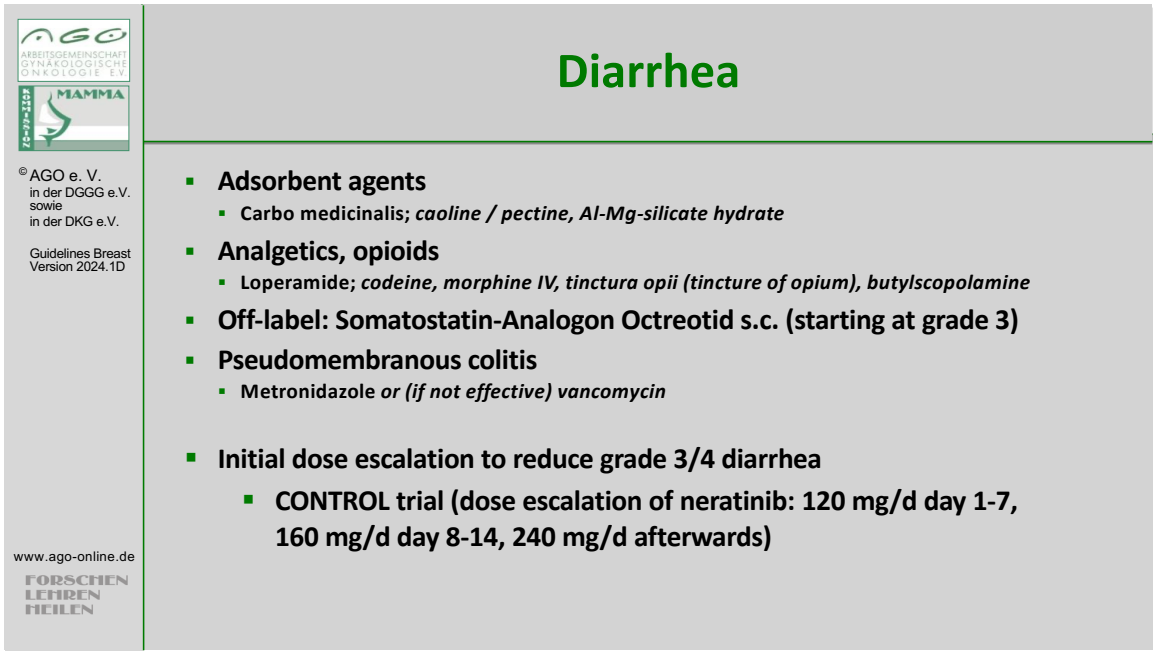

Relevant practice guideline

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the prevention of diarrhea in patients with metastatic colorectal cancer treated with irinotecan." Support Care Cancer 2015:23;661-70.
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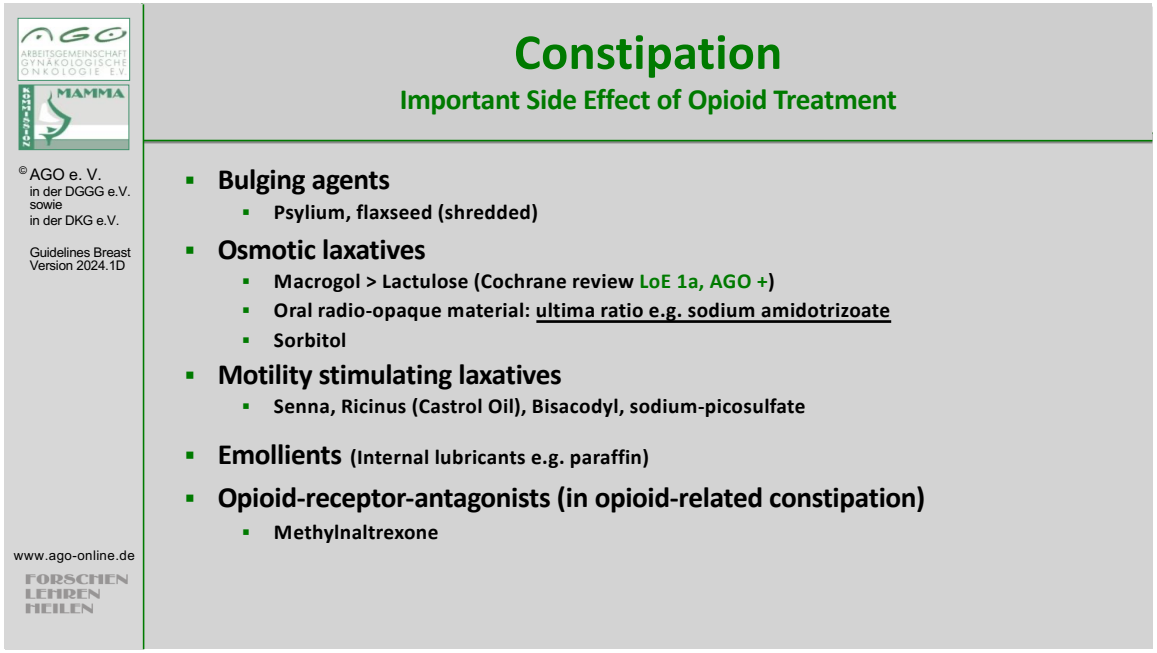

Relevant practice guideline

1. Leitlinienprogramm Onkologie (Deutsche Krebsgesellschaft, Deutsche Krebshilfe, AWMF): Supportive Therapie bei onkologischen PatientInnen - Langversion 1.3, Februar 2020, AWMF Registernummer: 032/054OL, http://leitlinienprogramm-onkologie.de/Supportive-Therapie.95.0.html (Zugriff am 27.12.2021)

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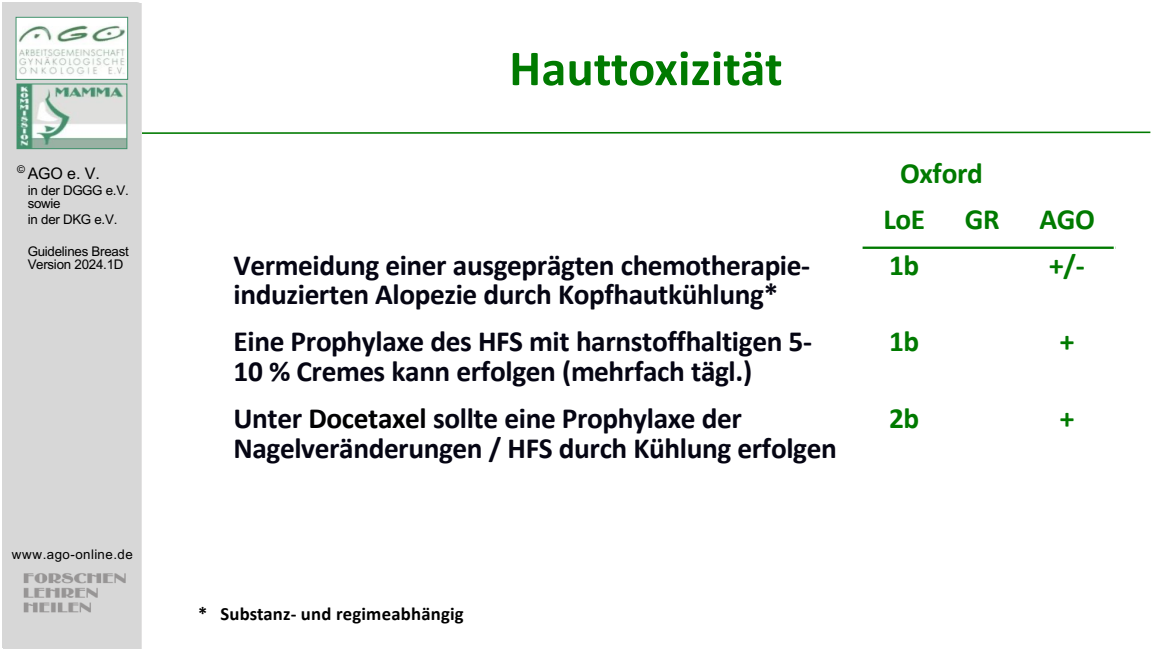
9. Erkrankungen der Haut und des Unterhautgewebes



Hauttoxizität

	Oxford		
	LoE	GR	AGO
Vermeidung einer ausgeprägten chemotherapie-induzierten Alopezie durch Kopfhautkühlung*	1b		+/-
Eine Prophylaxe des HFS mit harnstoffhaltigen 5-10 % Cremes kann erfolgen (mehrfach tägl.)	1b		+
Unter Docetaxel sollte eine Prophylaxe der Nagelveränderungen / HFS durch Kühlung erfolgen	2b		+

* **Substanz- und regimeabhängig**

Relevant practice guidelines

1. Leitlinienprogramm Onkologie (Deutsche Krebsgesellschaft, Deutsche Krebshilfe, AWMF): Supportive Therapie bei onkologischen PatientInnen - Langversion 1.3, Februar 2020, AWMF Registernummer: 032/054OL, http://leitlinienprogramm-onkologie.de/Supportive-Therapie.95.0.html (Zugriff am 27.12.2021)
2. Lacouture ME, Sibaud V, Gerber PA, et al. Prevention and management of dermatological toxicities related to anticancer agents: ESMO Clinical Practice Guidelines. Ann Oncol 2021;32:157-170.

Scalp Cooling:

1. Nangia J, Wang T, Osborne C, et al. Effect of Scalp Cooling Device on Alopecia in Women Undergoing Chemotherapy for Breast Cancer: The SCALP Randomized Clinical Trial JAMA. 2017 Feb 14;317(6):596-605.
2. Rugo HS, Voigt J. Scalp Hypothermia for Preventing Alopecia During Chemotherapy. A Systematic Review and Meta-Analysis of Randomized Controlled Trials. Clin Breast Cancer. 2018 Feb;18(1):19-28.
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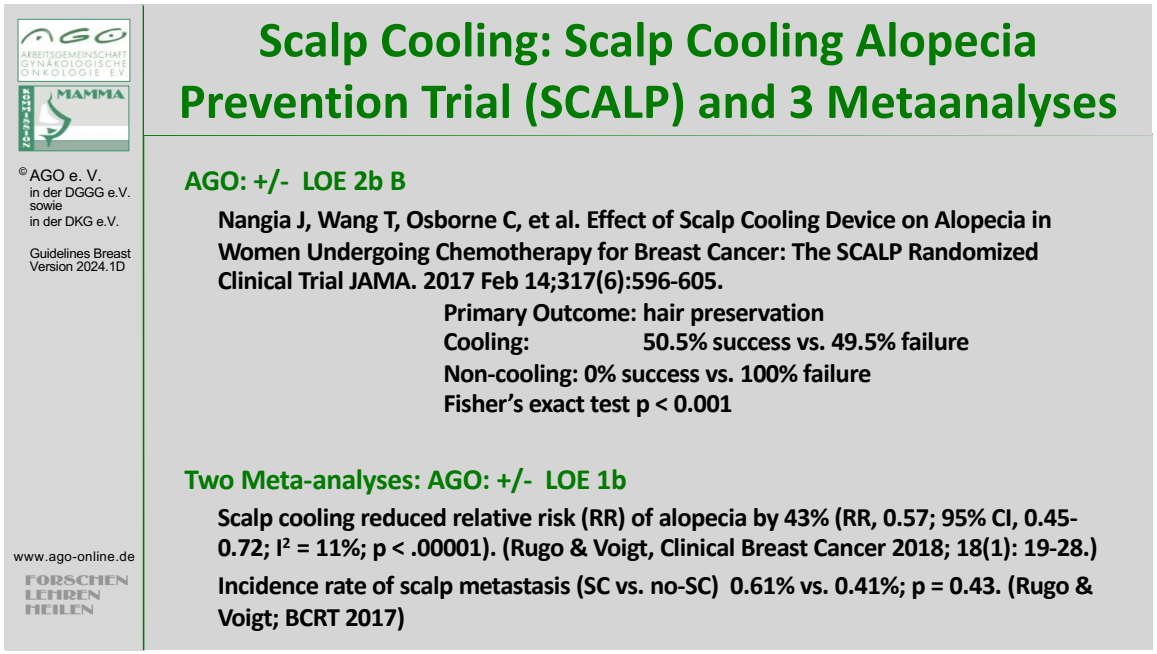

1. Nangia J, Wang T, Osborne C, et al. Effect of Scalp Cooling Device on Alopecia in Women Undergoing Chemotherapy for Breast Cancer: The SCALP Randomized Clinical Trial JAMA. 2017 Feb 14;317(6):596-605.
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3. Rugo HS, Melin SA, Voigt J. Scalp cooling with adjuvant/neoadjuvant chemotherapy for breast cancer and the risk of scalp metastases: systematic review and meta-analysis. Breast Cancer Res Treat. 2017 Jun;163(2):199-205.
4. Efficacy of Interventions for Prevention of Chemotherapyinduced alopecia: A Systematic Review and Metaanalysis, Hyoseung S et al , Int. J. Cancer: 136, E442–E454 (2015)

10. Skelettmuskulatur-, Bindegewebs- und Knochenerkrankungen

(siehe Kapitel Osteoonkologie)

Relevant practice guideline

1. Leitlinienprogramm Onkologie (Deutsche Krebsgesellschaft, Deutsche Krebshilfe, AWMF): Supportive Therapie bei onkologischen PatientInnen - Langversion 1.3, Februar 2020, AWMF Registernummer: 032/054OL, http://leitlinienprogramm-onkologie.de/Supportive-Therapie.95.0.html (Zugriff am 27.12.2021)

11. Allgemeine Erkrankungen und Beschwerden am Verabreichungsort

<u>Relevant practice guideline</u>

1. Leitlinienprogramm Onkologie (Deutsche Krebsgesellschaft, Deutsche Krebshilfe, AWMF): Supportive Therapie bei onkologischen PatientInnen - Langversion 1.2, 2019, AWMF Registernummer: 032/054OL, http://leitlinienprogramm- onkologie.de/Supportive-Therapie.95.0.html (Zugriff am 08.01.2020)

Paravasate mit potenziell nekrotisierenden Substanzen (Anthracycline, Taxane, Vinorelbin)

	Oxford		
	LoE	GR	AGO
Dexrazoxane zur Behandlung von Anthracyclin-Paravasaten (Ausnahme liposomales A)	2b	B	++
Hyaluronsäure zur Behandlung von Taxan / Vinorelbin-Paravasaten (off-label use)	3b	B	+

Relevant practice guideline:

1. Hensley ML, Hagerty KL, Kewalramani T et al. American Society of Clinical Oncology 2008 clinical practice guideline update: use of chemotherapy and radiation therapy protectants. J Clin Oncol. 2009 Jan 1;27(1):127-45.
2. Leitlinienprogramm Onkologie (Deutsche Krebsgesellschaft, Deutsche Krebshilfe, AWMF): Supportive Therapie bei onkologischen PatientInnen - Langversion 1.3, Februar 2020, AWMF Registernummer: 032/054OL, http://leitlinienprogramm-onkologie.de/Supportive-Therapie.95.0.html (Zugriff am 27.12.2021)

Dexrazoxane

1. Hensley ML, Hagerty KL, Kewalramani T, et al.: Cardioprotective effect of dexrazoxane in patients with breast cancer treated with anthracyclines in adjuvant setting: a 10-year single institution experience. J Clin Oncol. 2009 Jan 1;27(1):127-45.
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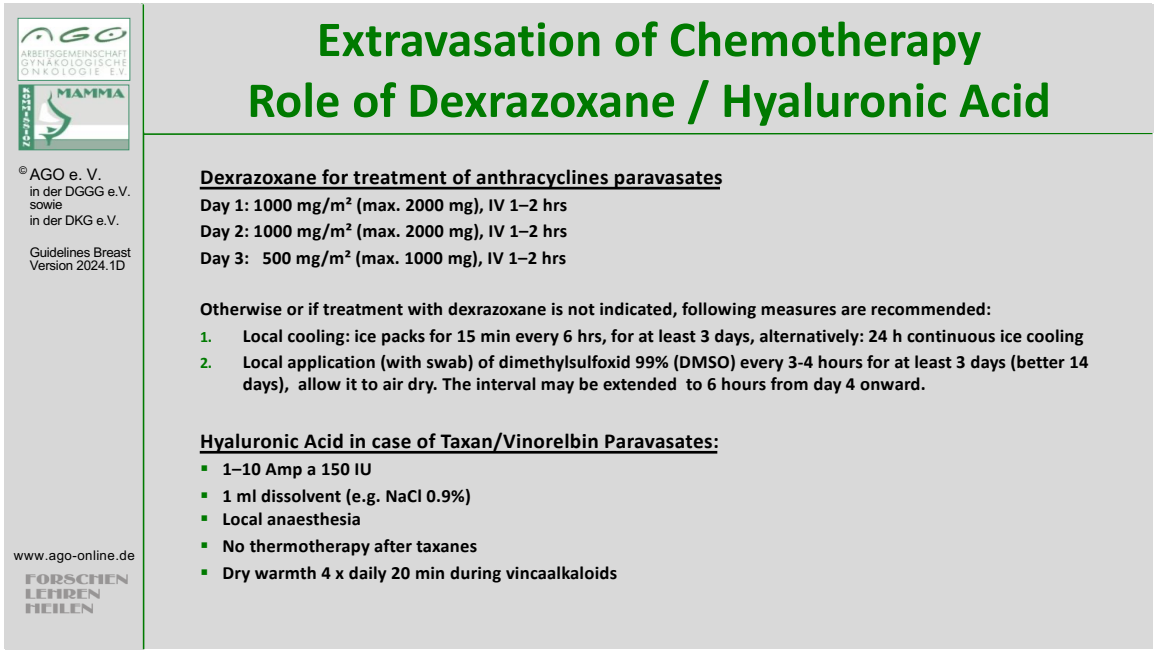
Hyaluronsäure

siehe S3-Leitlinie, Kapitel 11: Paravasate.



Relevant practice guideline

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12. Lunge

Relevant practice guideline

1. Leitlinienprogramm Onkologie (Deutsche Krebsgesellschaft, Deutsche Krebshilfe, AWMF): Supportive Therapie bei onkologischen PatientInnen - Langversion 1.3, 2020, AWMF Registernummer: 032/054OL, http://leitlinienprogramm- onkologie.de/Supportive-Therapie.95.0.html (Zugriff am 17.01.2022)

Medikamenten-induzierte Pneumonitis, Interstitielle Lungenerkrankung (ILD)

	Oxford		
	LoE	GR	AGO
Diagnostische Abklärung mittels CT-Thorax	1a	B	++
Therapie je nach Schweregrad und auslösender Noxe*			
Kortikosteroidtherapie (Beginn mit ≥ 0,5 mg/kg/d Prednisolon-Äquivalent)	1a	B	++
Dosisunterbrechung bzw. Therapieabbruch* (s. jeweilige Fachinformation)	1b	B	++

1. Leitlinienprogramm Onkologie (Deutsche Krebsgesellschaft, Deutsche Krebshilfe, AWMF): Supportive Therapie bei onkologischen PatientInnen - Langversion 1.3, 2020, AWMF Registernummer: 032/054OL, http://leitlinienprogramm- onkologie.de/Supportive-Therapie.95.0.html (Zugriff am 17.01.2022)
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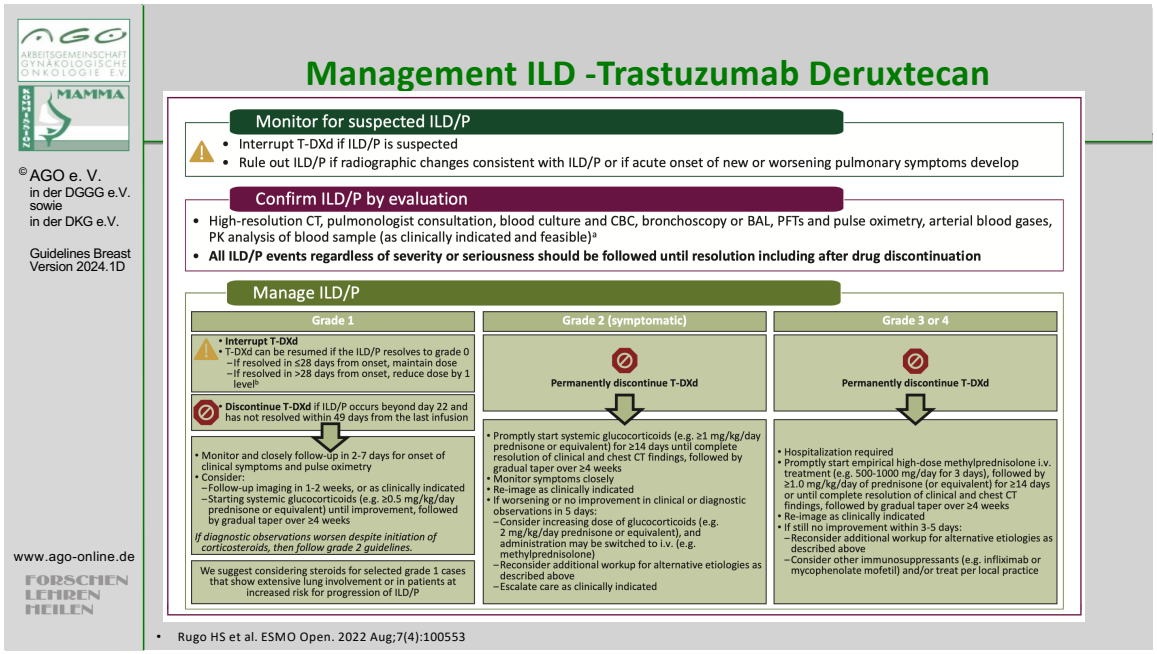

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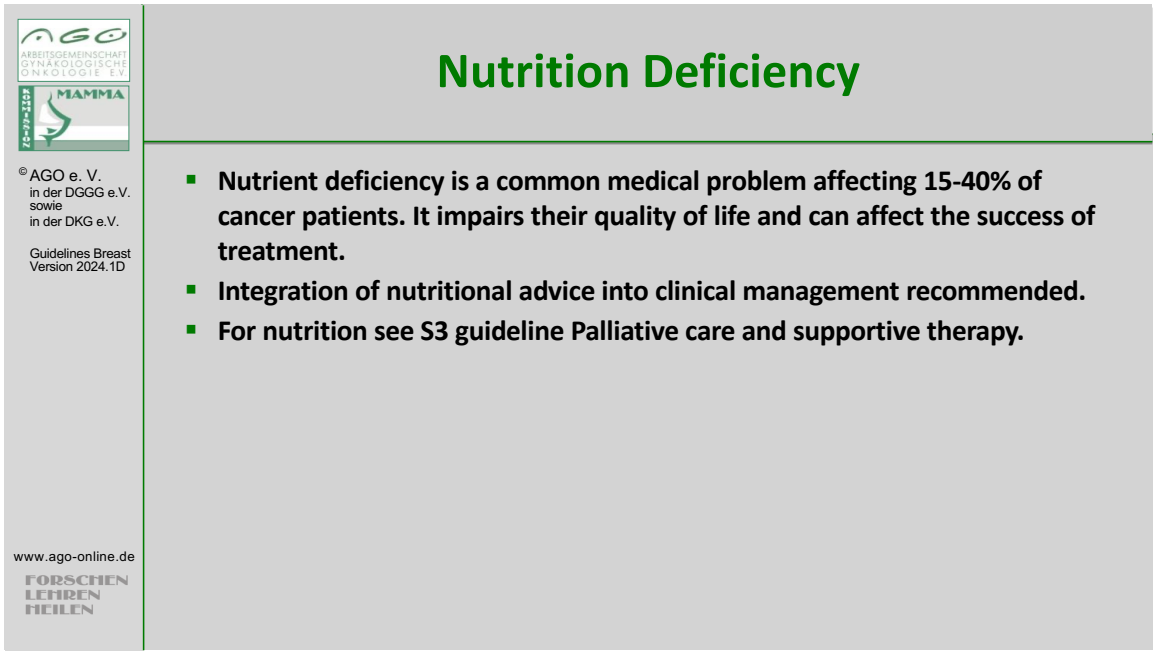
6. Fachinformation Trastuzumab Deruxtecan

Andere supportive und palliative Fragestellungen

- **Seltene Symptome (aus der ESMO-Leitlinie für orphan symptoms 2020):**
  - **Muskelkrämpfe**
  - **Myoklonus**
  - **Geschmacksveränderungen**
  - **Trockener Mund (Xerostomie)**
  - **Hustenreiz, Schluckauf**
  - **Rectal tenesmus**
  - **Restless legs-Syndrom**

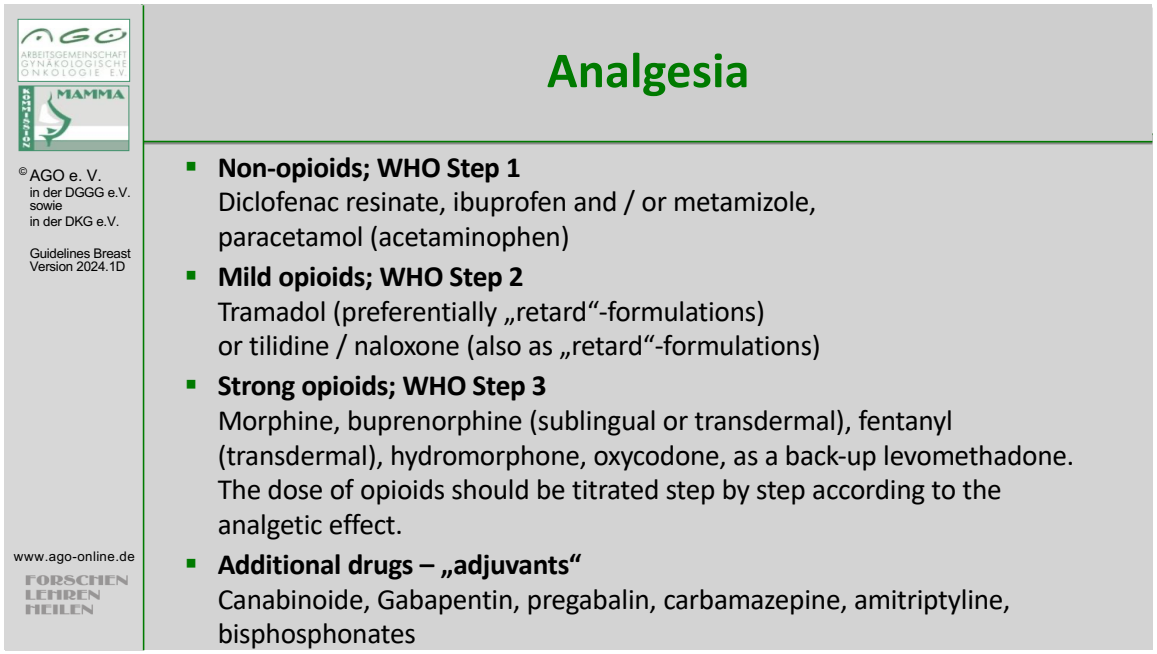
- **Weitere Fragestellungen**
  - **Ernährung**
  - **Schmerztherapie**
  - **Palliative Care**
  - **ZNS Metastasierung (siehe entsprechendes Kapitel)**

1. Santini D, Armento G, Giusti R, et al. Management of orphan symptoms: ESMO Clinical Practice Guidelines for diagnosis and treatment. ESMO Open 2020 Nov;5(6):e000933.
2. Erweiterte S3-Leitlinie Palliativmedizin für Patienten mit einer nicht heilbaren Krebserkrankung, 2021



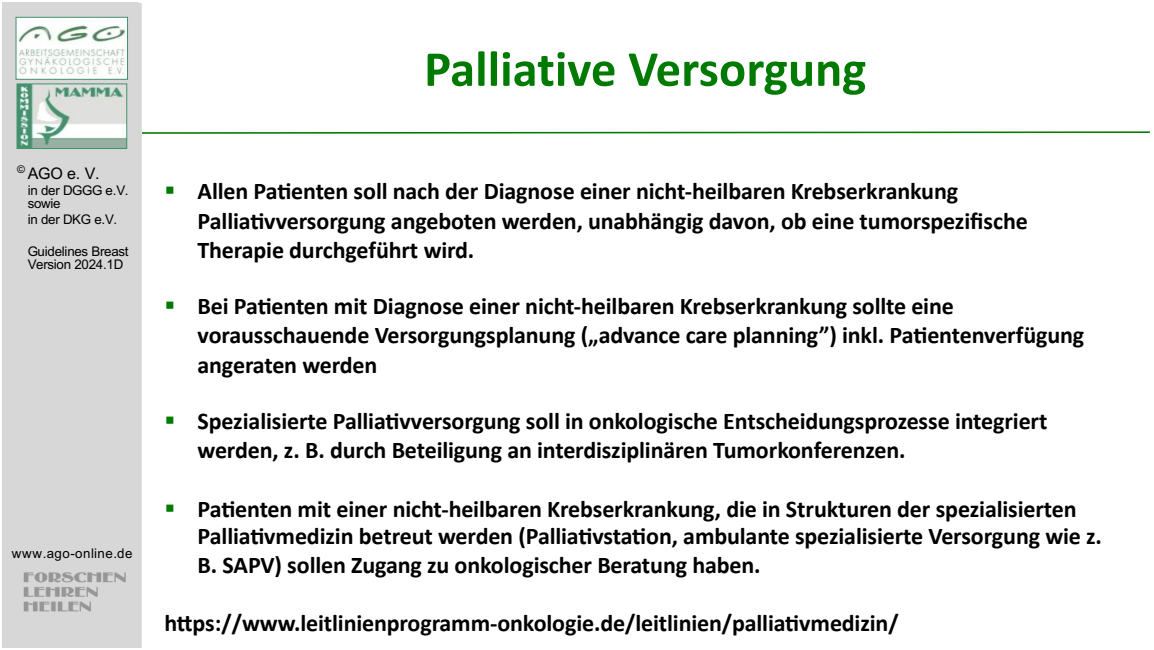
Klinische Ernährung

1. Arends J, Bertz H, Bischoff SC, et al. Klinische Ernährung in der Onkologie. S3-Leitlinie (AWMF Reg.: 073-006) Aktuel Ernahrungsmed. 2015; 40: e1–e74. https://www.dgem.de/sites/default/files/PDFs/Leitlinien/S3-Leitlinien/073-006l_S3_Klin_Ern%C3%A4hrung_in_der_Onkologie_2015-10.pdf (abgerufen 28.12.2021)
2. de Las Peñas R, Majem M, Perez-Altozano J, et al. SEOM clinical guidelines on nutrition in cancer patients (2018). Clin Transl Oncol. 2019 Jan;21(1):87-93.
3. van den Berg MMGA, Kok DE, Posthuma L, et al. Body composition is associated with risk of toxicity-induced modifications of treatment in women with stage I-IIIB breast cancer receiving chemotherapy. Breast Cancer Res Treat. 2019 Jan;173(2):475-481.



Relevant practice guideline:

1. World Health Organization (2018). WHO guidelines for the pharmacological and radiotherapeutic management of cancer pain in adults and adolescents. World Health Organization. https://apps.who.int/iris/handle/10665/279700. Lizenz: CC BY-NC-SA 3.0 IGO (Zugriff 27.12.2021)
2. NCCN guideline: Adult cancer pain. Version 2.2021. https://www.nccn.org/professionals/physician_gls/pdf/pain.pdf (Zugriff 27.12.2021)
3. Horlemann J, Schürmann N. DGS Praxisleitlinien in der Schmerztherapie. Cannabis in der Schmerzmedizin v1.0. https://dgs-praxisleitlinien.de/cannabis/ (Zugriff 27.12.2021)
4. Erweiterte S3-Leitlinie Palliativmedizin für Patienten mit einer nicht heilbaren Krebserkrankung , 2021



Palliative Versorgung

- **Allen Patienten soll nach der Diagnose einer nicht-heilbaren Krebserkrankung Palliativversorgung angeboten werden, unabhängig davon, ob eine tumorspezifische Therapie durchgeführt wird.**
- **Bei Patienten mit Diagnose einer nicht-heilbaren Krebserkrankung sollte eine vorausschauende Versorgungsplanung („advance care planning") inkl. Patientenverfügung angeraten werden**
- **Spezialisierte Palliativversorgung soll in onkologische Entscheidungsprozesse integriert werden, z. B. durch Beteiligung an interdisziplinären Tumorkonferenzen.**
- **Patienten mit einer nicht-heilbaren Krebserkrankung, die in Strukturen der spezialisierten Palliativmedizin betreut werden (Palliativstation, ambulante spezialisierte Versorgung wie z. B. SAPV) sollen Zugang zu onkologischer Beratung haben.**

https://www.leitlinienprogramm-onkologie.de/leitlinien/palliativmedizin/

1. Leitlinienprogramm Onkologie (Deutsche Krebsgesellschaft, Deutsche Krebshilfe, AWMF): Palliativmedizin für Patienten mit einer nicht-heilbaren Krebserkrankung, Langversion 2.2, September 2020, AWMF-Registernummer: 128/001OL, https://www.leitlinienprogramm-onkologie.de/leitlinien/palliativmedizin/ (abgerufen am: 27.12.2021)
2. Jacobs, Kuhlmey, Greß et al., Pflege-Report 2022 Springer Verlag, ISBN 978-3-662-65203-9
3. Yves et al., Advance care planning in oncology: a scoping review and some recommendations, Libert, Current Opinion in Oncology 35(4):p 261-275,