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Gynaecological Issues in Breast Cancer Patients

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Gynaecologic Issues in Breast Cancer Patients

- **Version 2015:**
  Loibl / Gerber
  (with contribution from Hanf / Kümmel und Stickeler / Scharl)

- **Version 2016:**
  Albert / Bauerfeind / Fersis / Thill

- **Version 2017:**
  Hanf / Scharl

Hormone (Replacement) Therapy (HT) of Estrogen Deficiency after Diagnosis of Breast Cancer

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	Oxford / AGO LoE / GR
➢ **Endocrine responsive disease (receptor pos.)** (HT may increase risk)	**1b B -**
➢ **Endocrine non-responsive disease (receptor neg.)** (apparently no risk increase)	**2a B +/-**
➢ **Endocrine responsive disease (receptor pos.): combined treatment TAM plus low-dose-HT**	**2b B +/-**
➢ **Tibolone**	**1b A - -**
➢ **Topical vaginal application of**	
➢ **Estriol (E3 0,03 mg as treatment course*)**	**4 D +/-**
➢ **Estradiol (E2) during AI therapy**	**4 C -**

***course: 4 weeks daily 1x1, further 8 weeks: 3 x 1 per week**

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Further Medical Approaches to Reduce Menopausal Symptoms I

	Oxford / LoE	AGO / GR	
Medical approaches:			
➢ **Selective serotonin reuptake inhibitors and serotonin-(noradrenalin) reuptake inhibitors (SSRI-SNRI): reduce hot flashes in BC patients**			
➢ **1st choice: venlafaxine**	**1a**	**A**	**+**
➢ **2nd choice: desvenlafaxine**	**1b**	**A**	**+/-**
➢ **3rd choice: sertraline, escitalopram**	**1b**	**A**	**+/-**
➢ **Gabapentin (patients using TAM)**	**1a**	**A**	**+**
➢ **Pregabalin**	**1b**	**A**	**+/-**
➢ **Clonidine (patients using TAM)**	**1a**	**A**	**+**
➢ **MPA (i.m. 500 mg single shot)** (most potent, but endocrine agent!)	**1b**	**A**	**+/-**
➢ **Vitamine E**	**1b**	**A**	**-**
➢ **Melatonin** (improvement in sleep quality)	**2b**	**C**	**+**

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CAM* - Approaches to Reduce Menopausal Symptoms II

* Complementary and Alternative Medicine

While anti-cancer treatment: Beware of drug interactions!

	Oxford / AGO LoE	GR	
➢ **Soy-derived phytoestrogens – isoflavonoids**			
Hot flush	1b	B	-
Sleep disturbance	1b	B	+/-
Topical vaginal application	1b	B	+/-
➢ **Red Clover isoflavonoids**			
Hot flush, sleep disturbance (might stimulate BC especially in endocrine responsive disease)	1b	B	+/-
➢ **Flaxseed-supplementation (40 g/d) (in HR+ ≤ 10 g/d) (reduces relapses, no effect on hot flashes)**	2b	B	+/-
➢ **Black Cohosh for hot flushes**	1b	B	-
➢ **Black cohosh + St.John´s Worth**	1b	B	+/-
➢ **St. John‘s Wort (in combination-therapy) (pharmacokinetic interference with endocrine therapy, cyctotoxic drugs and tyrosin kinase inhibitors)**	1b	B	--
➢ **Ginseng root (Panax ginseng or P. quinquefolius)**	1b	B	-
➢ **Bromelain + Papain + Selen + Lektin (for, AI induced joint symptoms)**	3b	B	+

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General Approaches to Reduce Menopausal Symptoms III
Integrative Oncology Aspects

	Oxford / LoE	AGO GR	
General approaches:			
➢ **Physical exercise**	**1b**	**B**	**++**
➢ **Mind body-medicine (yoga, hypnosis, education, counselling)**	**1b**	**B**	**+**
➢ **Cognitive behavioral therapy (CBT)**	**1b**	**B**	**++**
➢ **Acupuncture**			
Aromatase-inhibitor treatment induced arthralgia	**2b**	**B**	**+**
Hot flashes	**1b**	**B**	**+**
Depression	**2b**	**B**	**+/-**
Anxiety, Sleep	**3b**	**C**	**+/-**

(no acupuncture in tumor bearing region, possibility of cell seeding)

Ovarian Protection and Fertility Preservation in Premenopausal Patients Receiving (neo)-Adjuvant Chemotherapy (CT)

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	Oxford / AGO LoE / GR		
➢ **For ovarian function protection**			
CT + GnRHa (GnRHa application > 2 weeks prior to chemotherapy, independently of hormone receptor status)	1a	B	+
➢ **Fertility preservation counselling**	4	C	++
➢ **Fertility preservation using assisted reproduction therapy (ART) (further information www.fertiprotect.de)**	4	C	+

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References

Ovarian Function Preservation – Comparison of Randomized Trials

	ZORO	PROMISE	Munster et al. - US	POEMS
Patient number	60 (60 HR-)	281 (50 HR-)	49 (13 HR-) of 124	218 (218 HR-)
Age median	38 years	39 years	39 years	Premenop. < 50 years
Treatment	goserelin	triptorelin	triptorelin	goserelin
Start of treatment	>2 weeks prior to cht	>1 week prior to cht	> 1 week prior to cht	> 1 week prior to cht
Primary Endpoint	menstruation at month 6 after chemotherapy	rate of early menopause at month 12 after chemotherapy	menstruation rate within 2 years after cht	Ovarian failure at 2 yrs after cht
Primary objective	to detect 30% absolute increase of menstruation rate	to detect at least 20% absolute reduction in early menopause	to detect 20% difference in amenorrhea rate - from 10% to 30%	
Multivar. analysis	age as only independent predictive factor	treatment as only independent predictive factor	n.d.	Treatment as only Independent predicitve factor
Resumption of menses at month 12 in HR- cohort	83% with LHRH vs. 80% w/o	93% with LHRHa vs. 74% w/o	74% with LHRH vs. 68% w/o	78% with LHRH vs. 75% w/o; at 2 years; 22% with LHRH vs. 8%
Median time to restoration of menses (months)	6.1 with LHRHa vs. 6.8 w/o; p=0.30	not reached with LHRH vs. 6.7 w/o; p=0.07	5.8 with LHRH vs. 5.0 w/o; p=0.58	n.d.
Cyclophosph. dose	4600 vs. 4700mg	4080 vs. 4008 mg	n.r.	n.a.

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Metaanalysis of GnRHa for Prevention of Premature Ovarian Failure

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Author (year of publication)	Odds Ratio	95%CI	Treated Events	Controls Events
Li M (2008)	0.31	0.11-0.89	8/31	17/32
Badaway (2009)	0.06	0.02-0.20	4/39	26/39
Sverrisdottir 1 (2009)	0.19	0.04-1.06	14/22	18/20
Sverrisdottr 2 (2009)	2.03	0.31-13.27	27/29	20/23
Del Mastro (2011)	0.27	0.14-0.54	13/148	35/133
Gerber (2011)	0.56	0.19-1.62	9/30	13/30
Sun (2011)	0.38	0.06-2.30	3/11	5/10
Munster (2012)	1.09	0.22-5.52	4/26	3/21
Elgindy 1 (2013)	0.76	0.18-3.25	4/25	5/25
Elgindy 2 (2013)	1.0	0.25-4.00	5/25	5/25
Song (2013)	0.50	0.25-1.03	15/89	27/94
Karimi-zarchi (2014)	0.05	0.01-0.29	2/21	14/21
Li JW (2014)	0.44	0.04-4.35	1/54	3/73
Moore (2015)	0.30	0.10-0.87	5/66	15/69
Summary: Fixed effect	0.34	0.25-0.46	114/616	206/615
Summary: Random effect	0.36	0.23-0.57		

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References

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Lambertini M, Ceppi M, Poggio F, Peccator FA, Azim HA, Ugolini D, Pronzato P, Loibl S, Moore HCF, Partidge AH, Bruzzi P, Del Mastro. Ovarian suppression using luteinizing hormone-releasing hormone agonists during chemotherapy to preserve ovarian function and fertility of breast cancer patients: a meta-analysis of randomizes studies. Ann Oncol. 2015 Dec;26(12):2408-19.

Metaanalysis of GnRHa for Prevention of Premature Ovarian Failure

Del Mastro L, Ceppi M, Poggio F, Bighin C, Peccatori F, Demeestere I, Levaggi A, Giraudi S, Lambertini M, D'Alonzo A, Canavese G, Pronzato P, Bruzzi P. Gonadotropin-releasing hormone analogues for the prevention of chemotherapy-induced premature ovarian failure in cancer women: systematic review and meta-analysis of randomized trials. Cancer Treat Rev. 2014 Jun;40(5):675-83

The use of LHRHa was associated with a significant reduced risk of primature ovarian failure (OR 0.36, 95% CI 0.23–0.57; P < 0.001), yet with significant heterogeneity (I2 = 47.1%, $P_{heterogeneity}$ = 0.026).

Phase III Studies, Investigating Role of LH-RHa for Prevention of Premature Ovarian Failure

Del Mastro L, Ceppi M, Poggio F, Bighin C, Peccatori F, Demeestere I, Levaggi A, Giraudi S, Lambertini M, D'Alonzo A, Canavese G, Pronzato P, Bruzzi P. Gonadotropin-releasing hormone analogues for the prevention of chemotherapy-induced premature ovarian failure in cancer women: systematic review and meta-analysis of randomized trials. Cancer Treat Rev. 2014 Jun;40(5):675-83

Phase IIII studies evaluated

- Li M et al.
- Badawy et al.
- Sverrisdottir et al.
- Del Mastro et al.
- Gerber et al.
- Sun et al.
- Munster et al.
- Elgindy et al.
- Song et al.
- Karimi-Zarchi et al.
- Li JW et al.
- Moore et al.

Testing Ovarian Reserve

	Oxford / LoE	AGO GR	
Assessment of ovarian reserve in infertile patients (>6-12 mths without conception)*	**5**	**C**	**+**
Tests for fertility assessment			
➢ **Anti-Müllerian Factor**	**3b**	**B**	**+**
➢ **Antral follicle count**	**3b**	**B**	**+**

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* Tests are suggested for women > 35 yrs and infertility for 6-12 months; the tests do not predict failure to conceive, but they allow to counsel that the window of opportunity to conceive may be shorter than anticipated and infertility treatment may be considered.

Assessment of Ovarian Reserve

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Tests recommended to assess ovarian reserved (according to ACOG Committee Opinion No. 618: Ovarian Reserve Testing. Obstetrics & Gynecology 2015;125: 268–273

Test	Details
FSH (follicle stimulating hormone) plus estradiol	• **Serum level on cycle day 2–3** • **Variation between cycles possible** • **High FSH value is associated with poor response to ovarian stimulation**
Anti Müllerian Hormone (AMH)	• **No specific timing for the test** • **Stable value within and between menstrual cycles** • **Low AMH value is associated with poor response to ovarian stimulation**
Antral follicle count (AFC)	• **Number of visible follicles (2–10 mm) during transvaginal ultrasound** • **Performed on cycle days 2–5** • **Number of antral follicles correlates with ovarian response to stimulation**

All the tests do not predict failure to conceive, but they allow to counsel that the window of opportunity to conceive may be shorter than anticipated.

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Contraceptive Options for Women after Diagnosis of Breast Cancer

	Oxford / AGO LoE / GR		
➢ Barrier methods	5	D	+
➢ Sterilization (tubal ligation / vasectomy)	5	D	+
➢ Non-hormonal intrauterine devices (IUDs)	3b	D	+
➢ Levonorgestrel-releasing IUDs	2b	C	-
➢ Removal in newly diagnosed patients	4	D	+/-
➢ Timing methods	5	D	-
➢ Injectable progestin-only contraceptives	5	D	-
➢ Progestin-only oral contraceptives	5	D	-
➢ Combined oral contraceptives	5	D	-

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Emergency Contraception
Options after Diagnosis of Breast Cancer

	Oxford / AGO LoE / GR		
➢ **Copper intrauterine device (Cu-IUD)**	5	D	+
➢ **Levonorgestrel, Ulipristal orally**	5	D	+

Sexual Health

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	Oxford / LoE	AGO GR	
➢ Assessment of sexual dysfunction	5	C	+
➢ Use of patient-reported questionnaires	4	C	+
➢ Vaginal dryness: Non-hormonal lubricans / moisturizers	1b	B	+
➢ Psychoeducational support, group therapy, sexual counseling, marital counseling, psychotherapy	1b	B	+

Assessment of Sexual Health

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- **Sexual Complaints Screener (SCS) for women***
  German Translation

Screening-Check-Fragebogen: Overall Sexual Function

1. Are you satisfied with your sexual function?
   yes, no; if no
2. How long have you been dissatified with your sexual function?
3. The problem(s) with your sexual function is: (mark one or more):
   1. Problem with little or no interest in sex
   2. Problem with decreased genital sensation (feeling)
   3. Problem with decreased vaginal lubrication (dryness)
   4. Problem reaching orgasm
   5. Problem with pain during sex
   6. Other
4. Which problem is most bothersome? (circle) 1, 2, 3, 4, 5, 6.
5. Would you like to talk about it with your doctor?

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Further Information

References

*** Hatzichristou D, Rosen RC, Denogatis LR, Low WY, Sadovsky R, Symonds T. Recommendations for the clinical evaluation of men and women with sexual dysfunction. J Sex Med 2010:7:337-348**

Gynecological Issues in Breast Cancer Patients (2/17)

Further information:

Screened data bases:

- Pubmed 2009 –2016
- ASCO 2009 - 2016
- Cochrane 2009 - 2016
- Medline 2009 - 2016

Screened: Metaanalyses/ Systematic reviews / RCT / Cohort studies

No references

Hormonal (Replacement) Therapy of Estrogen Deficiency after Diagnosis of Breast Cancer (3/17)

No further information

References:

Endocrine responsive disease
(HT may increase risk)
Endocrine non-responsive disease
(apparently no risk increase)
Endocrine responsive disease: combined
treatment TAM plus low-dose-HT

1. Holmberg L: Increased risk of recurrence after hormone replacement therapy in breast cancer survivors. J Natl Cancer Inst 100:475-82, 2008.
2. Fahlén M: Hormone replacement therapy after breast cancer: 10 year follow up of the Stockholm randomised trial. Eur J Cancer. 2013 Jan;49(1):52-9.
3. Lupo M, Dains JE, Madsen LT. Hormone Replacement Therapy: An Increased Risk of Recurrence and Mortality for Breast Cancer Patients? J Adv Pract Oncol. 2015 Jul-Aug;6(4):322-30. Epub 2015 Jul 1.Kuhle CL, Kapoor E, Sood R, Thielen JM, Jatoi A, Faubion SS. Menopausal hormone therapy in cancer survivors: A narrative review of the literature. Maturitas. 2016 Oct;92:86-96.

Tibolone:

1. Sismondi P., Kimmig R., Kubista E., Biglia N., Egberts J., Mulder R., Planellas J., Moggio G., Mol-Arts M., Kenemans P. Effects of Tibolone on climacteric symptoms and quality of life in breast cancer patients—Data from LIBERATE trial. Maturitas. 2011;70:365–372.

2. Bundred NJ: Tibolone increases bone mineral density but also relapse in breast cancer survivors: LIBERATE trial bone substudy. Breast Cancer Res. 2012 Jan 17;14(1):R13.

Topical Vaginal Application:

Genitourinary syndrome of menopause (GSM) is defined as a collection of symptoms and signs associated with a decrease in estrogen and other sex steroids involving changes to the labia majora/minora, clitoris, vestibule/introitus, vagina, urethra and bladder. For urogenital problems vaginal moisturizers, isoflavone or topical estrogens can be used.

1. Biglia N, Peano E, Sgandurra P, et al. Low-dose vaginal estrogens or vaginal moisturizer in breast cancer survivors with urogenital atrophy: a preliminary study. Gynecol Endocrinol 2010;26(6):404–12
2. Le Ray I., Dell'Aniello S., Bonnetain F., Azoulay L., Suissa S. Local estrogen therapy and risk of breast cancer recurrence among hormone treated patients: A nested case-control study. Breast Cancer Res. Treat. 2012;135:603–609.
3. Portman DJ, Gass ML; Vulvovaginal Athrophy Terminology Consensus Conference Panel. Genitourinary syndrome of menopause: new terminology for vulvovaginal atrophy from the International Society for the Study of Women's Sexual Health and The North American Menopause Society. Climacteric 2014 Oct;17(5):557-63
4. Buchholz S, Mögele M, Lintermans A, Bellen G, Prasauskas V, Ortmann O, Grob P, Neven P, Donders G. Vaginal estriol-lactobacilli combination and quality of life in endocrine-treated breast cancer. Climacteric. 2015;18(2):252-9.
5. Donders G, Belle G, Neven P, Grob P, Prasauskas V, Buchholz S, Ortmann O. Effect of ultra-low-dose estriol and lactobacilli vaginal tablets (Gynoflor®) on inflammatory and infectious markers of the vaginal ecosystem in postmenopausal women with breast cancer on aromatase inhibitors. Eur J Clin Microbiol Infect Dis (2015) 34:2023–2028
6. Mazzarello S1, Hutton B, Ibrahim MF, Jacobs C, Shorr R, Smith S, Ng T, Clemons M. Management of urogenital atrophy in breast cancer patients: a systematic review of available evidence from randomized trials. Breast Cancer Res Treat. 2015 Jul;152(1):1-8. doi: 10.1007/s10549-015-3434-z. Epub 2015 May 24.
7. American College of Obstetricians and Gynecologists' Committee on Gynecologic Practice, Farrell R. ACOG Committee Opinion No. 659: The Use of Vaginal Estrogen in Women With a History of Estrogen-Dependent Breast Cancer. Obstet Gynecol. 2016 Mar;127(3):e93-6

Further Medical Approaches to Reduce Menopausal Symptoms I (4/17)

Further information:

Menopausal symptoms are bothersome for breast cancer survivors and affect quality of life. Since hormonal replacement therapy should be avoided in ER positive breast cancer patients alternatives are important. In breast cancer patients treated with tamoxifen and menopausal symproms the use of venlafaxine, citalopram, clonidine, gabapentin and pregabalin is considered effective in treating hot flashes. The use of paroxetine and fluoxetine should be avoided because the may reduce the efficacy of tamoxifen. Increased breast cancer mortality is associated with the use of paroxetine and tamoxifen. Patients not being treated with tamoxifen the use of venlafaxine, paroxetine, citalopram, clonidine, gabapentin and pregabalin be considered effective in treating hot flashes. Breast cancer survivors prefer venlafaxine over gabapentin for treating hot flashes. Sertraline, phytoestrogens, black cohosh and St. John's wort should not be used to treat hot flashes.

References:

1. Chubak J, Bowles EJ,Yu O, Buist DS, Fujii M, Boudreau DM. Breast cancer recurrence in relation to antidepressant use. Cancer Causes Control. 2016 Jan;27(1):125-36.
2. Haque R, Shi J, Schottinger JE, Ahmed SA, Cheetham TC, Chung J, Avila C, Kleinman K, Habel LA, Fletcher SW, Kwan MLTamoxifen and Antidepressant Drug Interaction in a Cohort of 16 887 Breast Cancer Survivors.J Natl Cancer Inst. 2015 Dec 1;108(3).
3. L'Espérance S: Pharmacological and non-hormonal treatment of hot flashes in breast cancer survivors: CEPO review and recommendations. Support Care Cancer. 2013 May;21(5):1461-74
4. Kelly CM, Juurlink DN, Gomes T, et al. Selective serotonin reuptake inhibitors and breast cancer mortality in women receiving tamoxifen: a population based cohort study. *BMJ*. 2010;340:c693.
5. Bordeleau L: Multicenter, randomized, cross-over clinical trial of venlafaxine versus gabapentin for the management of hot flashes in breast cancer survivors. J Clin Oncol. 2010 Dec 10;28(35):5147-52.
6. Wiśniewska I, Jochymek B, Lenart-Lipińska M, Chabowski M. The pharmacological and hormonal therapy of hot flushes in breast cancer survivors. Breast Cancer. 2016 Mar;23(2):178-82.

7. Antoine C, Ameye L, Paesmans M, Rozenberg S. Treatment of climacteric symptoms in breast cancer patients: a retrospective study from a medication databank. Maturitas. 2014 Jul;78(3):228-32.
8. Drewe J, Bucher KA, Zahner C. A systematic review of non-hormonal treatments of vasomotor symptoms in climacteric and cancer patients. Springerplus. 2015:10;4:65.
9. Leon-Ferre RA, Majithia N, Loprinzi CL. Management of hot flashes in women with breast cancer receiving ovarian function suppression. Cancer Treat Rev. 2017 Jan;52:82-90.

SSRI:

1. Shams T1, Firwana B, Habib F, Alshahrani A, Alnouh B, Murad MH, Ferwana M. SSRIs for hot flashes: a systematic review and meta-analysis of randomized trials. J Gen Intern Med. 2014 Jan;29(1):204-13.

Venlafaxine

1. Ramaswami R, Villarreal MD, Pitta DM, Carpenter JS, Stebbing J, Kalesan B. Venlafaxine in management of hot flashes in women with breast cancer: a systematic review and meta-analysis. Breast Cancer Res Treat. 2015 Jul;152(2):231-7.
2. Boekhout AH, Vincent AD, Dalesio OB, et al: Management of hot flashes in patients who have breast cancer with venlafaxine and clonidine: a randomized, double-blind, placebo-controlled trial. J Clin Oncol. 2011 Oct 10;29(29):3862-8.
3. Bordeleau L, Pritchard KI, Loprinzi CL, et al: Multicenter, randomized, cross-over clinical trial of venlafaxine versus gabapentin for the management of hot flashes in breast cancer survivors. J Clin Oncol. 2010 Dec 10;28(35):5147-52.

Desvenlafaxine

1. Archer DF, Dupont CM, Constantine GD et al.: Desvenlafaxine for the treatment of vasomotor symptoms associated with menopause: a double-blind, randomized, placebo-controlled trial of efficacy and safety. Am J Obstet Gynecol. 2009;200(3):238 e231–238 e210.
2. Speroff L, Gass M, Constantine G et al.: Efficacy and tolerability of desvenlafaxine succinate treatment for menopausal vasomotor symptoms: a randomized controlled trial. Obstet Gynecol. 2008;111(1):77–87.

3. Deecher DC, Alf inito PD, Leventhal L et al.: Alleviation of thermoregulatory dysfunction with the new serotonin and norepinephrine reuptake inhibitor desvenlafaxine succinate in ovariectomized rodent models. Endocrinology. 2007;148(3):1376–1383.

Paroxetine

1. Simon JA, Portman DJ, Kaunitz AM, Mekonnen H, Kazempour K, Bhaskar S, Lippman J. Low-dose paroxetine 7.5 mg for menopausal vasomotor symptoms: two randomized controlled trials. Menopause. 2013 Oct;20(10):1027-35. doi: 10.1097/GME.0b013e3182a66aa7.

Fluoxetine

1. Loprinzi CL, Sloan J, Stearns V et al.: Newer antidepressants and gabapentin for hot flashes: an individual patient pooled analysis. J Clin Oncol. 2009;27(17):2831–2837.

Citalopram

1. Barton DL, LaVasseur B, Sloan JA et al.: A phase III trial evaluating three doses of citalopram for hot flashes: NCCTG trial N05C9. J Clin Oncol. 2008;26(20):9538.
2. Kalay AE, Demir B, Haberal A et al.: Efficacy of citalopram on climacteric symptoms. Menopause. 2007;14(2):223–229.

Gabapentin

1. Bordeleau L, Pritchard KI, Loprinzi CL, et al: Multicenter, randomized, cross-over clinical trial of venlafaxine versus gabapentin for the management of hot flashes in breast cancer survivors. J Clin Oncol. 2010 Dec 10;28(35):5147-52
2. Loprinzi CL, Sloan J, Stearns V et al.: Newer antidepressants and gabapentin for hot flashes: an individual patient pooled analysis. J Clin Oncol. 2009;27(17):2831–2837.

3. Biglia N, Sgandurra P, Peano E et al.: Non-hormonal treatment of hot flushes in breast cancer survivors: gabapentin vs. vitamin E. Climacteric. 2009 Aug;12(4):310-8.
4. Toulis KA, Tzellos T, Kouvelas D et al.: Gabapentin for the treatment of hot flashes in women with natural or tamoxifen-induced menopause: a systematic review and meta-analysis. Clin Ther. 2009 Feb;31(2):221-35.

Pregabalin

1. Pachman DR, Jason MJ, Loprinzi CL: Management of menopause-associated vasomotor symptoms: Current treatment options, challenges and future directions. International Journal of Women's Health 2010:2 123-135.
2. Loprinzi CL, Qin R, Baclueva EP et al.: Phase III, randomized, double-blind, placebo-controlled evaluation of pregabalin for alleviating hot flashes, N07C1. J Clin Oncol. 2010;28(4):641–647.

Clonidin

1. Drewe J, Bucher KA, Zahner CA systematic review of non-hormonal treatments of vasomotor symptoms in climacteric and cancer patients. Springerplus. 2015 Feb 10;4:65. doi: 10.1186/s40064-015-0808-y. eCollection 2015.
2. Boekhout AH, Vincent AD, Dalesio OB, et al: Management of hot flashes in patients who have breast cancer with venlafaxine and clonidine: a randomized, double-blind, placebo-controlled trial. J Clin Oncol. 2011 Oct 10;29(29):3862-8
3. Friedman GD, Udaltsova N, Habel LA (2011) Norepinephrine antagonists and cancer risk. Int J Cancer 128(3):737–738, doi:10.1002/ijc.25351 (Clonidin)

(D) MPA (depo-) (Medroxyprogesterone acetate)

1. Prior JC, Nielsen JD, Hitchcock CL et al.: Medroxyprogesterone and conjugated oestrogen are equivalent for hot flushes: a 1-year randomized double-blind trial following premenopausal ovariectomy. Clin Sci (Lond). 2007;112(10):517–525.
2. Loprinzi CL, Levitt R, Barton D et al.: Phase III comparison of depomedroxyprogesterone acetate to venlafaxine for managing hot flashes: North Central Cancer Treatment Group Trial N99C7. J Clin Oncol. 2006 Mar 20;24(9):1409-14. Epub 2006 Feb 27.

Vitamine E

1. Rada G: Non-hormonal interventions for hot flushes in women with a history of breast cancer (Review). The Cochrane Library 2010, Issue 9.
2. Greenlee H, Hershman DL, Jacobson JS: Use of antioxidant supplements during breast cancer treatment: a comprehensive review. Breast Cancer Res Treat. 2009 Jun;115(3):437-52.
3. Biglia N, Sgandurra P, Peano E et al.: Non-hormonal treatment of hot flushes in breast cancer survivors: gabapentin vs. vitamin E. Climacteric. 2009 Aug;12(4):310-8.
4. Bardia A, Tleyjeh IM, Cerhan JR et al.: Efficacy of antioxidant supplementation in reducing primary cancer incidence and mortality: systematic review and meta-analysis. Mayo Clin Proc.2008;83(1):23–34.

Melatonin

1. Chen WY, Giobbie-Hurder A, Gantman K, Savoie J, Scheib R, Parker LM, Schernhammer ES (2014) A randomized, placebo-controlled trial of melatonin on breast cancer survivors: impact on sleep, mood, and hot flashes. Breast Cancer Res Treat 145(2):381–388, doi:10.1007/s10549-014-2944-4

CAM-Approaches to Reduce Menopausal Symptoms II (5/17)

Further information and references:

The majority of studies, regarding the efficacy of herbal treatments for menopausal symptoms – mostly hot flushes – have not been conducted in women with breast cancer and many are of short duration. A recent systematic review retrieved 8 RCTs involving 798 breast cancer patients. Traditional herbal medicine combined with conventional therapy in the treatment of breast cancer has been efficacious in improving QOL and in decreasing the number of hot flashes per day. Increased pharmacovigilance practices for herbal medicines are required with initiatives to stimulate reporting of suspected adverse reactions. Red clover users were less likely to report weight gain, night sweats, and difficulty concentrating.

1. Roberts H. Safety of herbal medicinal products in women with breast cancer. Maturitas. 2010;66(4):363-9.
2. Ma H: Estrogenic botanical supplements, health-related quality of life, fatigue, and hormone-related symptoms in breast cancer survivors: a HEAL study report. BMC Complement Altern Med. 2011;11:109.
3. Kim W, Lee WB, Lee JW, Min BI, Baek SK, Lee HS, Cho SH. Traditional herbal medicine as adjunctive therapy for breast cancer: A systematic review. Complement Ther Med. 2015 Aug;23(4):626-32. doi: 10.1016/j.ctim.2015.03.011.
4. Lethaby A, Marjoribanks J, Kronenberg F, Roberts H, Eden J, Brown J. Phytoestrogens for menopausal vasomotor symptoms. Cochrane Database Syst Rev. 2013 Dec 10;(12):CD001395. doi: 10.1002/14651858.CD001395.pub4.

Soy- and red clover derived isoflavonoids are potent phytoestrogens, which can interact with estrogen receptors, and their dose-response relationships with estrogen receptors in vitro are complicated. Interaction.may have breast cancer protecting and / or promoting effects.

Soy- derieved isoflavonoids

Five RCTs reported on the efficacy of soy for hot flashes, showing no significant reductions in hot flashes compared to placebo.
There is lack of evidence showing harm from use of soy with respect to risk of breast cancer or recurrence, based on long term observational data. Soy intake consistent with that of a traditional Japanese diet (2-3 servings daily, containing 25-

50mg isoflavones) may be protective against breast cancer and recurrence. Human trials show that soy does not increase circulating estradiol or affect estrogen-responsive target tissues. Prospective data of soy use in women taking tamoxifen does not indicate increased risk of recurrence. While there is no clear evidence of harm, better evidence confirming safety is required before use of high dose (≥100mg) isoflavones can be recommended for breast cancer patients (Fritz H, 2013).

Topical administration of soy-derieved isoflavonoids

Topical isoflavones showed beneficial effects on dyspareunia, vaginal dryness and maturation value. Isoflavone vaginal gel was similar to the use of conjugated equine oestrogen cream (0.3 mg/day) was and superior to that of placebo.

Red clover-derived isoflavonoids

The systematic review and meta-analysis of 11 RCTs showed that red clover had a positive effect on alleviating hot flash in menopausal women.
Slight changes were found in FSH, LH, testosterone, and SHBG and more important a significant effect in estrogen status by red clover consumption. Red clover may increase the risk of estrogen-dependent cancers as estradiol showed a borderline increase in the red clover groups in comparison with control group based on three trials.

1. Chen MN: Efficacy of phytoestrogens for menopausal symptoms: a meta-analysis and systematic review. Climacteric. 2015 Apr;18(2):260-9.
2. Lethaby A: Phytoestrogens for menopausal vasomotor symptoms. Cochrane Database Syst Rev. 2013 Dec 10;12:CD001395.
3. Fritz H, Seely D, Flower G, Skidmore B, Fernandes R, Vadeboncoeur S, Kennedy D, Cooley K, Wong R, Sagar S, Sabri E, Fergusson D. Soy, red clover, and isoflavones and breast cancer: a systematic review. PLoS One. 2013 Nov 28;8(11):e81968.
4. Ghazanfarpour M, Sadeghi R, Latifnejad Roudsari R, Mirzaii Najmabadi K, Mousavi Bazaz M, Abdolahian S, Khadivzadeh T. Effects of red clover on hot flash and circulating hormone concentrations in menopausal women: a systematic review and meta-analysis. Avicenna J Phytomed. 2015 Nov-Dec;5(6):498-511.
5. Shakeri F: Effectiveness of red clover in alleviating of menopausal symptoms: A 12-week randomized, controlled trial. Climacteric. 2015;18(4):568-73.

6. Ghazanfarpour M, Latifnejad Roudsari R, Treglia G, Sadeghi R. Topical administration of isoflavones for treatment of vaginal symptoms in postmenopausal women: A systematic review of randomised controlled trials. J Obstet Gynaecol. 2015 Nov;35(8):783-7.
7. Ghazanfarpour M, Sadeghi R, Roudsari RL. The application of soy isoflavones for subjective symptoms and objective signs of vaginal atrophy in menopause: A systematic review of randomised controlled trials. J Obstet Gynaecol. 2016;36(2):160-71.

Flaxseed has no effect on reducing hot flashes based on randomized phase III trial where it failed to demonstrate a significant reduction of hot flushes for postmenopausal patients taking additional 410 g of lignans as compared to placebo

1. Flower G: Flax and Breast Cancer: A Systematic Review. Integr Cancer Ther. 2013 8;13(3):181-192.
2. Pruthi S: A phase III, randomized, placebo-controlled, double-blind trial of flaxseed for the treatment of hot flashes: North Central Cancer Treatment Group N08C7.Menopause 2012: 19:48-53.

Taken together neither Black cohosh (Cimicifuga racemosa) nor St John's Wort nor Ginseng root showed a benefit regarding improvement of menopausal symptoms.

1. Leach MJ: Black cohosh (Cimicifuga spp.) for menopausal symptoms. Cochrane Database Syst Rev. 2012; 9:CD007244.
2. Caraci F: Metabolic drug interactions between antidepressants and anticancer drugs: focus on selective serotonin reuptake inhibitors and hypericum extract. Curr Drug Metab. 2011 Jul 1;12(6):570-7.
3. Kim MS: Ginseng for managing menopause symptoms: a systematic review of randomized clinical trials. J Ginseng Res. 2013 Mar;37(1):30-6.

A combination of sodium selenite, proteolytic plant enzymes (bromelaine and papain), and Lens culinaris lectin as a complementary treatment was effective in reducing hormonal treatment related athralgia and mucosal dryness. But there were no reduction in other menopausal symptoms.

1. Uhlenbruck B: Reduced side-effects of adjuvant hormone therapy in breast cancer patients by complementary medicine. In Vivo. 2010; 24(5):799-802.

General Approaches to Reduce Menopausal Symptoms III - Integrative Oncological Aspects (6/17)

Further information:

Physical exercises (PE) and cognitive behaviroal therapy (CBT; this is one form of psychotherapy) have positive effects on menopausal symptoms and, to a lesser degree, on sexuality and physical functioning of patients with breast cancer experiencing treatment-induced menopause. The CBT and PE are cost-effective. Prescribtion is recommended by the authors.
Mind-Body-Medicine (MBM; Relaxation training, Yoga, Hypnosis) resulted in a moderate up to a significant improvement in hot flashes score, joint pain, fatigue, sleep, mood, and relaxation. However these effects are seen even after a longer period of application and avoid after some months stopping MBM. Acupuncture can also be used but the results from RCT are conflicting. A meta-analysis showed significant effects of acupuncture compared with sham acupuncture, but marked heterogeneity was observed in this model.

References:

1. Duijts SF: Efficacy of cognitive behavioral therapy and physical exercise in alleviating treatment-induced menopausal symptoms in patients with breast cancer: results of a randomized, controlled, multicenter trial. J Clin Oncol. 2012 Nov 20;30(33):4124-33.
2. Pachman DR: Management of menopause-associated vasomotor symptoms: Current treatment options, challenges and future directions. International Journal of Women's Health 2010:2 123-135.
3. Mann E: Cognitive behavioural treatment for women who have menopausal symptoms after breast cancer treatment (MENOS 1): a randomised controlled trial. Lancet Oncol. 2012 Mar;13(3):309-18.
4. Buffart LM: Physical and psychosocial benefits of yoga in cancer patients and survivors, a systematic review and meta-analysis of randomized controlled trials. BMC Cancer. 2012 Nov 27;12:559.
5. Cramer H: Characteristics of randomized controlled trials of yoga: a bibliometric analysis. BMC Complement Altern Med. 2014 Sep 2;14:328.
6. Mewes JC, Steuten LM, Duijts SF, Oldenburg HS, van Beurden M, Stuiver MM, Hunter MS, Kieffer JM, van Harten WH, Aaronson NK.Cost-effectiveness of cognitive behavioral therapy and physical exercise for alleviating

treatment-induced menopausal symptoms in breast cancer patients. J Cancer Surviv. 2015 Mar;9(1):126-35. doi: 10.1007/s11764-014-0396-9. Epub 2014 Sep 2.

7. Chiu HY1, Shyu YK, Chang PC, Tsai PS. Effects of Acupuncture on Menopause-Related Symptoms in Breast Cancer Survivors: A Meta-analysis of Randomized Controlled Trials. Cancer Nurs. 2016 May-Jun;39(3):228-37.

Ovarian Protection and Fertility Preservation in Premenopausal Patients Receiving Adjuvant Chemotherapy (7/17)

No further information

References:

Ovarian function protection

1. Gerber B, von Minckwitz G, Stehle H, Reimer T, Felberbaum R, Maass N, Fischer D, Sommer HL, Conrad B, Ortmann O, Fehm T, Rezai M, Mehta K, Loibl S; German Breast Group Investigators.Effect of luteinizing hormone-releasing hormone agonist on ovarian function after modern adjuvant breast cancer chemotherapy: the GBG 37 ZORO study. J Clin Oncol. 2011 Jun 10;29(17):2334-41.
2. Del Mastro L, Ceppi M, Poggio F, Bighin C, Peccatori F, Demeestere I, Levaggi A, Giraudi S, Lambertini M, D'Alonzo A, Canavese G, Pronzato P, Bruzzi P. Gonadotropin-releasing hormone analogues for the prevention of chemotherapy-induced premature ovarian failure in cancer women: systematic review and meta-analysis of randomized trials. Cancer Treat Rev. 2014 Jun;40(5):675-83.
3. Del Mastro L, Ceppi M, Poggio F, et al. Gonadotropin-releasing hormone analogues for the prevention of chemotherapy-induced premature ovarian failure in cancer women: systematic review and meta-analysis of randomized trials. Cancer Treat Rev 2014;40:675–83.
4. Del Mastro L, Rossi G, Lambertini M, Poggio F, Pronzato P. New insights on the role of luteinizing hormone releasing hormone agonists in premenopausal early breast cancer patients. Cancer Treat Rev. 2016 Jan;42:18-23.
5. Munholz RR, et al: Gonadotropin-Releaseing hormone agonists for ovarian function preservation in premenopausal women undergoing chemotherapy for early stage breast cancer- A systematic Review and Meta Analysis. JAMA Oncol 2016;2:65-73
6. Munster PN, Moore AP, Ismail-Khan R, Cox CE, Lacevic M, Gross-King M, Xu P, Carter WB, Minton SE. Randomized Trial Using Gonadotropin-Releasing Hormone Agonist Triptorelin for the Preservation of Ovarian Function During (Neo)Adjuvant Chemotherapy for Breast Cancer. J Clin Oncol. 2012 Jan 9. [Epub ahead of print]

Fertility preservation counselling

1. American Society of Clinical Oncology clinical practice guideline update.Fertility preservation for patients with cancer. J Clin Oncol. 2013 Jul 1;31(19):2500-10. .
2. Abe A, Kuwahara A, Iwasa T, Nishimura M, Irahara M. A survey on fertility management in young women of reproductive age treated with chemotherapy. Int J Clin Oncol. 2016 Dec;21(6):1183-1190.

Fertility preservation with assisted reproduction therapy

1. Lawrenz B, Jauckus J, Kupka MS et al. Fertility preservation in >1,000 patients: patient's characteristics, spectrum, efficacy and risks of applied preservation techniques. Arch Gynecol Obstet. 2011 Mar;283(3):651-6.
2. Shalom-Paz E, Almog B, Shehata F et al. Fertility preservation for breast-cancer patients using IVM followed by oocyte or embryo vitrification. Reprod Biomed Online. 2010 Oct;21(4):566-71. Epub 2010 May 13.
3. Besse D, Bellavia M, de Ziegler D, Wunder D.Fertility and cancer: psychological support in young women who contemplate emergency assisted reproductive technologies (ART) prior to chemo- and/or radiation-therapy. Swiss Med Wkly. 2010 Jul 16;140:w13075. doi: 10.4414/smw.2010.13075.
4. Dittrich R, Hackl J, Lotz L, Hoffmann I, Beckmann MW. Pregnancies and live births after 20 transplantations of cryopreserved ovarian tissue in a single center. Fertil Steril. 2015 Feb;103(2):462-8.
5. Gamzatova Z, Komlichenko E, Kostareva A, Galagudza M, Ulrikh E, Zubareva T, Sheveleva T, Nezhentseva E, Kalinina E. Autotransplantation of cryopreserved ovarian tissue--effective method of fertility preservation in cancer patients. Gynecol Endocrinol. 2014 Oct;30 Suppl 1:43-7.
6. Luke B, Brown MB, Missmer SA, Spector LG, Leach RE, Williams M, Koch L, Smith YR, Stern JE, Ball GD, Schymura MJ. Assisted reproductive technology use and outcomes among women with a history of cancer. Hum Reprod. 2016 Jan;31(1):183-9.

Ovarian Function Preservation - Comparison of Randomized Trials (8/17)

Further information

This overview compares the different randomised trials comparing fertility preservation with GnRHanalogue without GnRHanalogue.
The ovarian failure rate at 2 years was statistically significant reduced from 22% without to 8% with GnRH treatment.
Reassuringly the disease-free survival was not compromised by GnRH, in the contrary, the GnRH-group had a statistically significant improved DFS and (HR 0.49, p= 0.04) as well as OFS (HR 0.43; p= 0.05).
The number of pregnancies (22 vs. 12) and babies born (18 vs. 12) was also improved by goserelin.
The study by Munster et al. has not finished recruitment. Only 49 out of 124 planned pts were randomised. However, the results are in concordance with the ZORO study. Supporting the fact that the observed effect of LHRH is at its best small.

References:

1. Munhoz RR, Pereira AA, Sasse AD, Hoff PM, Traina TA, Hudis CA, Marques RJ. Gonadotropin-Releasing Hormone Agonists for Ovarian Function Preservation in Premenopausal Women Undergoing Chemotherapy for Early-Stage Breast Cancer: A Systematic Review and Meta-analysis. JAMA Oncol. 2016 Jan 1;2(1):65-73.
2. Lawrenz B, Jauckus J, Kupka MS et al. Fertility preservation in >1,000 patients: patient's characteristics, spectrum, efficacy and risks of applied preservation techniques. Arch Gynecol Obstet. 2010 Dec 1. [Epub ahead of print].
3. Shalom-Paz E, Almog B, Shehata F et al. Fertility preservation for breast-cancer patients using IVM followed by oocyte or embryo vitrification. Reprod Biomed Online. 2010 Oct;21(4):566-71. Epub 2010 May 13.
4. Besse D, Bellavia M, de Ziegler D, Wunder D.Fertility and cancer: psychological support in young women who contemplate emergency assisted reproductive technologies (ART) prior to chemo- and/or radiation-therapy. Swiss Med Wkly. 2010 Jul 16;140:w13075. doi: 10.4414/smw.2010.13075.
5. Del Mastro L, Boni L, Michelotti A et al. Effect of the gonadotropin-releasing hormone analogue triptorelin on the occurrence of chemotherapy-induced early menopause in premenopausal women with breast cancer: a randomized trial. JAMA. 2011 Jul 20;306(3):269-76.

6. Munster PN, Moore AP, Ismail-Khan R, Cox CE, Lacevic M, Gross-King M, Xu P, Carter WB, Minton SE. Randomized Trial Using Gonadotropin-Releasing Hormone Agonist Triptorelin for the Preservation of Ovarian Function During (Neo)Adjuvant Chemotherapy for Breast Cancer. J Clin Oncol. 2012 Jan 9. [Epub ahead of print]
7. Loibl S, Gerber B. Gonadotropin-releasing hormone analogue for premenopausal women with breast cancer. JAMA. 2011 Oct 26;306(16):1760; author reply 1760-1.

Metaanalysis of GnRHa for Prevention of Premature Ovarian Failure (9 and 10/17)

Further information

A recent meta-analysis of 12 randomized controlled trials investigated whether the use of LHRHa during chemotherapy in premenopausal breast cancer patients reduces treatment-related primature ovarian failure (POF) rate, increases pregnancy rate, and disease-free survival (DFS: median follow-up 4.1.years). Results were: „The use of LHRHa was associated with a significant reduced risk of primature ovarian failure (OR 0.36, 95% CI 0.23–0.57; P < 0.001), yet with significant heterogeneity (I^2 = 47.1%, $P_{heterogeneity}$ = 0.026). In eight studies reporting amenorrhea rates 1 year after chemotherapy completion, the addition of LHRHa reduced the risk of POF (OR 0.55, 95% CI 0.41–0.73, P < 0.001) without heterogeneity (I^2 = 0.0%, $P_{heterogeneity}$ = 0.936). In five studies reporting pregnancies, more patients treated with LHRHa achieved pregnancy (33 versus 19 women; OR 1.83, 95% CI 1.02–3.28, P = 0.041; I^2 = 0.0%, $P_{heterogeneity}$ = 0.629). In three studies reporting DFS, no difference was observed (HR 1.00, 95% CI 0.49–2.04, P = 0.939; I^2 = 68.0%, $P_{heterogeneity}$ = 0.044)“ The authors concluded: „Temporary ovarian suppression with LHRHa in young breast cancer patients is associated with a reduced risk of chemotherapy-induced primature ovarian failure and seems to increase the pregnancy rate, without an apparent negative consequence on prognosis.“

Reference:

1. Lambertini M, Ceppi M, Poggio F, Peccator FA, Azim HA, Ugolini D, Pronzato P, Loibl S, Moore HCF, Partidge AH, Bruzzi P, Del Mastro. Ovarian suppression using luteinizing hormone-releasing hormone agonists during chemotherapy to preserve ovarian function and fertility of breast cancer patients: a meta-analysis of randomizes studies. Ann Oncol. 2015 Dec;26(12):2408-19.
2. Del Mastro L, Ceppi M, Poggio F, Bighin C, Peccatori F, Demeestere I, Levaggi A, Giraudi S, Lambertini M, D'Alonzo A, Canavese G, Pronzato P, Bruzzi P. Gonadotropin-releasing hormone analogues for the prevention of

chemotherapy-induced premature ovarian failure in cancer women: systematic review and meta-analysis of randomized trials. Cancer Treat Rev. 2014 Jun;40(5):675-83

Phase III Studies Evaluating the Role of LH-RHa in the Preservation of Ovarian Function (11/17)

No further information

References:

1. Del Mastro L, Rossi G, Lambertini M, Poggio F, Pronzato P. New insights on the role of luteinizing hormone releasing hormone agonists in premenopausal early breast cancer patients. Cancer Treat Rev. 2016 Jan;42:18-23

Testing Ovarian Reserve (12/17)

Further information:

The menstruation history is reliable only in women < 45 years of age. A more precise evaluation, especially in perimenopausal patients is possible with the measurement of FSH and E2 levels in peripheral blood. Hormonal replacement should be stopped at least 6 weeks before measurement. In perimenopausal women undergoing treatment for breast cancer, it can be difficult to determine true menopausal status because adjuvant chemotherapy, tamoxifen, and gonadotropin-releasing hormone analogues can induce transient (or permanent) ovarian suppression.
Low AMH (antimuellerian hormone) levels seem to be indicative for reduced ovarian reserve and chemotherapy-related amenorrhea (CRA) in chemotherapy-treated breast cancer patients.
Antral follicle count, defined as the sum of follicle diameters of all follicles of 10mm in both ovaries.

References:

1. Anderson RA, Rosendahl M, Kelsey TW, Cameron DA. Pretreatment anti-Müllerian hormone predicts for loss of ovarian function after chemotherapy for early breast cancer. Eur J Cancer. 2013 Nov;49(16):3404-11.
2. Anderson RA, Cameron DA. Pretreatment serum anti-müllerian hormone predicts long-term ovarian function and bone mass after chemotherapy for early breast cancer. J Clin Endocrinol Metab. 2011 May;96(5):1336-43.
3. Su HI, Chung K, Sammel MD, Gracia CR, DeMichele A. Antral follicle count provides additive information to hormone measures for determining ovarian function in breast cancer survivors.Fertil Steril. 2011 Apr;95(5):1857-9.
4. Miyoshi Y, Yasuda K, Tachibana M, Yoshida H, Miyashita E, Miyamura T, Hashii Y, Hashimoto K, Kimura T, Ozono K. Longitudinal observation of serum anti-Müllerian hormone in three girls after cancer treatment. Clin Pediatr Endocrinol. 2016 Oct;25(4):119-126.

Assessment of Ovarian Reserve (13/17)

No further information

Reference:

1. Tests recommended to assess ovarian reserved (according to ACOG Committee Opinion No. 618: Ovarian Reserve Testing. Obstetrics & Gynecology 2015 ;125 : 268–273

Contraceptive Options for Women after Diagnosis of Breast Cancer (14/17)

No further information

References:

1. Lu, Y., Ma, H., Malone, K.E., Norman, S.A., Sullivan-Halley, J., Strom, B.L. et al. Oral contraceptive use and survival in women with invasive breast cancer. Cancer Epidemiol Biomarkers Prev. 2011; 20: 1391–1397
2. Moormann PG, Havrilesky LJ, Giersch JM et al. Oral contraceptives and risk of ovarian cancer and breast cancer among high-risk women: a systematic review and meta-analysis.J Clin Oncol. 2013 Nov 20;31(33):4188-98.
3. Dorjgochoo T, Shu XO, Li HL, Qian HZ, Yang G, Cai H, Gao YT, Zheng W.Use of oral contraceptives, intrauterine devices and tubal sterilization and cancer risk in a large prospective study, from 1996 to 2006. Int J Cancer. 2009 May 15;124(10):2442-9. doi: 10.1002/ijc.24232.
4. Dominick S et al: Levonogestrel intrauterine system for endometrial protection in women with breast cancer on adjuvant tamoxifen. Cochrane Database syst Rev 2015; Dec 9; 12: CD007245.
5. Soini T, Hurskainen R, Grénman S, Mäenpää J, Paavonen J, Joensuu H, Pukkala E. Levonorgestrel-releasing intrauterine system and the risk of breast cancer: A nationwide cohort study. Acta Oncol. 2016 Feb;55(2):188-92.
6. Yun Fu Zhigang Zhuang: Long-term effects of levonorgestrel-releasing intrauterine system on tamoxifen-treated breast cancer patients: a meta-analysis Int J Clin Exp Pathol 2014; 7 (10) 6419-6429

Emergency Contraception - Options after Diagnosis of Breast Cancer (15/17)

No further information

References:

1. Casay PM et al: Caring for breast cancer survivor‘s health and well beeing WJCO 2014;10: 5 (4): 693-704

Sexual Health (16/17)

No further information

References:

1. Runowicz CD1, Leach CR2, Henry NL1, Henry KS1, Mackey HT1, Cowens-Alvarado RL1, Cannady RS1, Pratt-Chapman ML1, Edge SB1, Jacobs LA1, Hurria A1, Marks LB1, LaMonte SJ1, Warner E1, Lyman GH1, Ganz PA1. American Cancer Society/American Society of Clinical Oncology Breast Cancer Survivorship Care Guideline. J Clin Oncol. 2015 Dec 7. pii: JCO.2015.64.3809
2. Mazzarello S1, Hutton B, Ibrahim MF, Jacobs C, Shorr R, Smith S, Ng T, Clemons M. Management of urogenital atrophy in breast cancer patients: a systematic review of available evidence from randomized trials. Breast Cancer Res Treat. 2015 Jul;152(1):1-8. doi: 10.1007/s10549-015-3434-z. Epub 2015 May 24.

Assessment of Sexual Health (17/17)

Further information:

Sexual Complaints Screener (SCS) for women
German Translation

References:

1. Hatzichristou D, Rosen RC, Denogatis LR, Low WY, Sadovsky R, Symonds T. Recommendations for the clinical evaluation of men and women with sexual dysfunction. J Sex Med 2010:7:337-348