Consider the main diagnosis

Diagnosis verificated:
Breast cancer
(ICD-10 C50)

Consider metastasis — 1 — M = 1

Consider the expression of estrogen receptor (ER) — 2 — M = 0

ER negative

ER positive

Consider the tumor's molecular subtype — 3

Luminal A
ER positive
PR any
HER2 negative
Ki67 low (<20%)

Luminal B (HER2 negative)
ER positive
PR any
HER2 negative
Ki67 high (≥20%)

Luminal B (HER2 positive)
ER positive
PR negative
HER2 positive
Ki67 any

HER2 type
ER negative
PR negative
HER2 positive
Ki67 any

Triple negative
ER negative
PR negative
HER2 negative
Ki67 any

Consider TNM — 4

Consider TNM — 5

Consider TNM — 6

Consider TNM — 7

Consider TNM — 8

T < 3 and N < 2 and G < 3

T ≥ 3 or N ≥ 2 or G ≥ 3

T = 1a and N = 0

T > 1a or N > 0

T1 = A and N = 0

T1b or T1c and N = 0

2 ≤ T ≤ 4 or N > 0

T = 1a and N = 0

T = 1b and N = 0

1c ≤ T ≤ 4 or N > 0

T = 1a and N = 0

T > 1a or N > 0

No prescribed chemotherapy

Chemotherapy prescription

No prescribed chemotherapy

Chemotherapy prescription

No prescribed chemotherapy

Chemotherapy prescription

Chemotherapy prescription

No prescribed chemotherapy

Chemotherapy prescription

Chemotherapy prescription

No prescribed chemotherapy

Chemotherapy prescription

COntraindications:
- a transmural myocardial infarction in an anamnesis
- ejection fraction <40%
- heart failure (II - IV stages)

Consider contraindications to anthracyclines — 9

Consider using taxanes — 10

Contraindications:
- diabetes (severe)
- allergic reactions
- individual intolerance

Consider the prognosis — 11

Rather bad:
- Ki67 > 20%
- nodes positive
- T ≥ 3
- age < 40y

No — 12

Consider contraindications to anthracyclines — 13

No — 14

Pick the pattern — 15

No — 16 — Yes

Rather good

Rather bad

Consider contraindications to anthracyclines

Consider contraindications to anthracyclines

17 — No

Pick the pattern

18 — No — 19

Pick the pattern

Yes

Yes

Yes

CMF

Epirubicin + cyclophosphamide

AC

DC

AC×4→P×4
AC×4→P×12
AC×4→D×4

add carboplatin to paclitaxel/docetaxel

AC×4→P×4
AC×4→P×12
AC×4→D×4

add trastuzumab to paclitaxel/docetaxel

DCH (or TCH)

(DCH + pertuzumab)×4

FEC×3→(D + trastuzumab + pertuzumab)×4

P + trastuzumab

Critical cardiopathology; age > 75y

Yes — 20 — No

Consider the BRCA mutations

Don't add carboplatin to a pattern

As a neoadjuvant chemotherapy only

As a neoadjuvant chemotherapy only

(If the prognosis is bad and the age < 50y)

Consider menstrual status — 21

Premenopause

Postmenopause

Consider contraindications to tamoxifen — 22 — No

Consider contraindications to tamoxifen

Contraindications:
- diabetes
- angiopathy, thrombosis and thromboembolism in anamnesis

Yes — 23 — No

Consider the risk of a recurrence — 24

At least one:
- age ≤ 35y,
- ovarian function is still preserved after an adjuvant chemotherapy treatment,
- T ≥ 3,
- ≥ 4 axillary nodes positive,
- G ≥ 3 (high grade),
- HER2 positive,
- Ki67 high,
- expressed LVI

Rather high

Rather low

Pick the pattern — 25

Gonadotropin-releasing hormone 5y + aromatase inhibitors 5y

Aromatase inhibitors 5y

Tamoxifen 5y

Tamoxifen 10y

Tamoxifen 5y → aromatase inhibitors 5y

Gonadotropin-releasing hormone 5y + Tamoxifen 5y

Tamoxifen 2y → aromatase inhibitors 3y

Aromatase inhibitors 2y → tamoxifen 3y

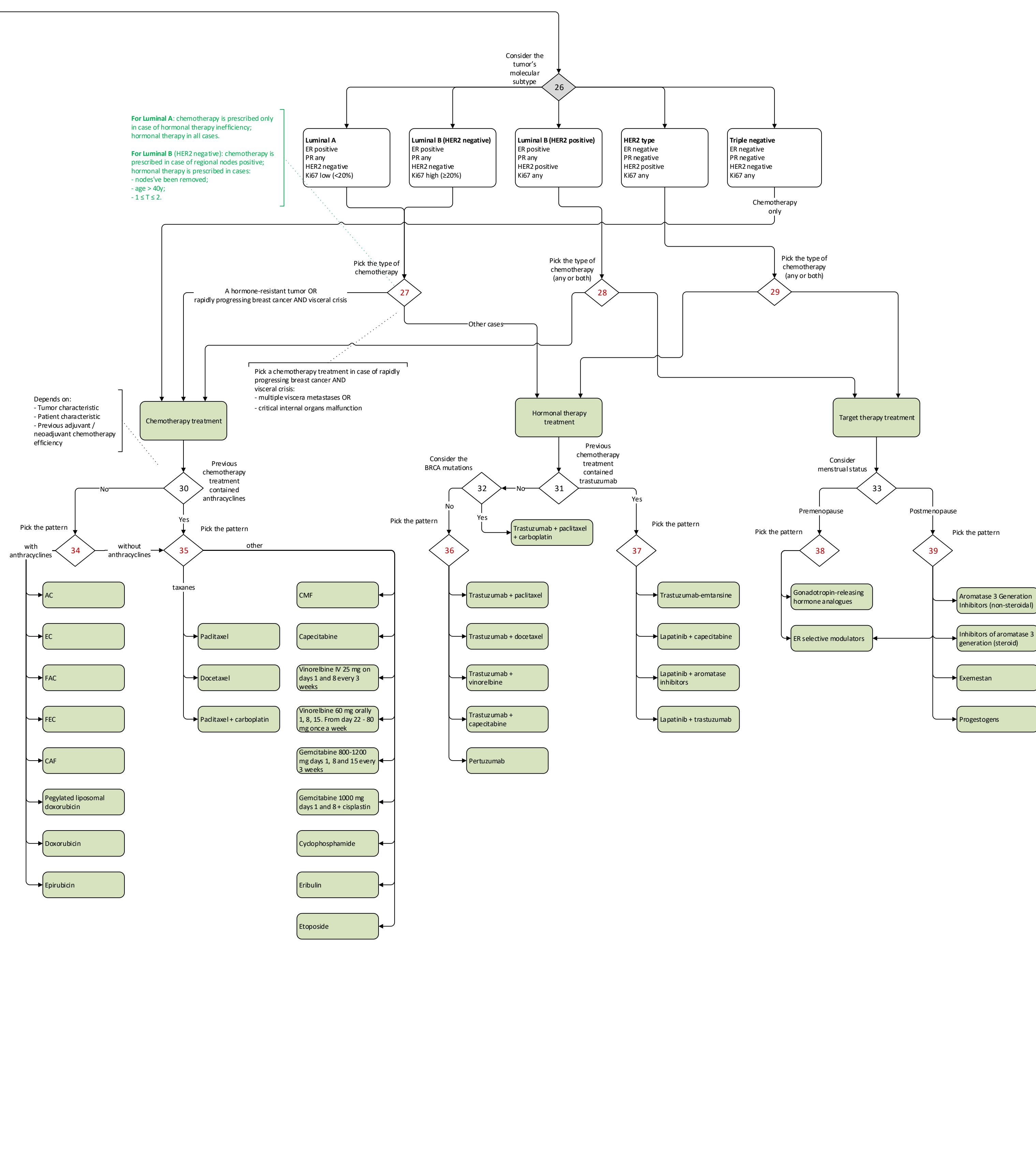**Consider the tumor's molecular subtype** — 26

For Luminal A: chemotherapy is prescribed only in case of hormonal therapy inefficiency; hormonal therapy in all cases.

For Luminal B (HER2 negative): chemotherapy is prescribed in case of regional nodes positive; hormonal therapy is prescribed in cases:
- nodes've been removed;
- age > 40y;
- 1 ≤ T ≤ 2.

Luminal A
ER positive
PR any
HER2 negative
Ki67 low (<20%)

Luminal B (HER2 negative)
ER positive
PR any
HER2 negative
Ki67 high (≥20%)

Luminal B (HER2 positive)
ER positive
PR negative
HER2 positive
Ki67 any

HER2 type
ER negative
PR negative
HER2 positive
Ki67 any

Triple negative
ER negative
PR negative
HER2 negative
Ki67 any

Chemotherapy only

Pick the type of chemotherapy — 27

Pick the type of chemotherapy — 28

Pick the type of chemotherapy (any or both) — 29

A hormone-resistant tumor OR rapidly progressing breast cancer AND visceral crisis

Other cases

Pick a chemotherapy treatment in case of rapidly progressing breast cancer AND visceral crisis:
- multiple viscera metastases OR
- critical internal organs malfunction

Depends on:
- Tumor characteristic
- Patient characteristic
- Previous adjuvant / neoadjuvant chemotherapy efficiency

Chemotherapy treatment

Hormonal therapy treatment

Target therapy treatment

Previous chemotherapy treatment contained anthracyclines

No — 30 — Yes

Consider the BRCA mutations

Previous chemotherapy treatment contained trastuzumab

No — 32 — Yes

31 — No

Yes

Consider menstrual status — 33

Pick the pattern

with anthracyclines — 34

without anthracyclines — 35

other

taxanes

Pick the pattern — 36

Pick the pattern — 37

Premenopause

Postmenopause

Pick the pattern — 38

Pick the pattern — 39

AC

EC

FAC

FEC

CAF

Pegylated liposomal doxorubicin

Doxorubicin

Epirubicin

Paclitaxel

Docetaxel

Paclitaxel + carboplatin

CMF

Capecitabine

Vinorelbine IV 25 mg on days 1 and 8 every 3 weeks

Vinorelbine 60 mg orally 1, 8, 15. From day 22 - 80 mg once a week

Gemcitabine 800-1200 mg days 1, 8 and 15 every 3 weeks

Gemcitabine 1000 mg days 1 and 8+ cisplatin

Cyclophosphamide

Eribulin

Etoposide

Trastuzumab + paclitaxel + carboplatin

Trastuzumab + paclitaxel

Trastuzumab + docetaxel

Trastuzumab + vinorelbine

Trastuzumab + Capecitabine

Pertuzumab

Trastuzumab-emtansine

Lapatinib + capecitabine

Lapatinib + aromatase inhibitors

Lapatinib + trastuzumab

Gonadotropin-releasing hormone analogues

ER selective modulators

Aromatase 3 Generation Inhibitors (non-steroidal)

Inhibitors of aromatase 3 generation (steroid)

Exemestan

Progestogens

In case of getting several equivalent chemotherapy patterns after checking all conditions, medications should be compared by efficiency, toxicity and cost

Legend:

CMF — Chemotherapy

Tamoxifen 2y → aromatase inhibitors 3y — Hormonal therapy

(DCH + pertuzumab)×4 — Chemotherapy with target therapy

Trastuzumab + vinorelbine — Metastatic positive cancer treatment

1 — Automatic pick based on the available data

9 — Decisions made by a Doctor (with System recommendations)

15 — Decisions made by a Doctor (without System recommendations)