

The EURO-FORTA (Fit fOR The Aged) List Version 2: Consensus Validation of a Clinical Tool for Improved Pharmacotherapy in Older Adults

Drugs & Aging

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The **EURO - F O R T A** list *Version 2 (light)*

“Fit fOR The Aged“

Expert Consensus Validation

F O R T A			
A	B	C	D

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Disclaimer

While building on an international foundation of medical evidence and experience for the medications listed, including already existing “negative lists” and classification systems, this FORTA List primarily reflects prescribing tendencies in seven European countries/regions. The FORTA labels themselves, being evidence-based, may possibly be subject to change during the course of further consensus evaluation procedures, depending on the state of evidence and clinical experience for a given substance⁵. Meanwhile, the FORTA principle has been validated in a randomized clinical trial (VALFORTA) showing a large improvement of medication quality and amelioration of clinical parameters⁶.

With the goal of creating a user-friendly clinical tool, a summary of relevant comments is given directly in the EURO-FORTA List, drawing on the Delphi experts’ extensive clinical experience. This is however by no means comprehensive and does not necessarily refer to specific evidence or sources. Therefore, the authors’ selection of suggestions, comments and warnings may be subjective⁵. ‘No comment’ reflects the absence of noteworthy or relevant words of information or caution within the context of the expert evaluation. All information herein is believed to be true and accurate. Neither the authors nor the University of Heidelberg or affiliated institutions, as the publishers of this list, can accept legal responsibility for any errors or omissions made in the contents of this list⁵.

We welcome all comments and criticism which may contribute to the quality, safety and usability of the EURO-FORTA List in daily clinical practice.

The FORTA Concept: expert panel for the FORTA classification system

FORTA Expert Review Panel

The following 48 colleagues, representing seven European countries/regions, provided their expertise for purposes of evaluating the proposed FORTA List. They received no honoraria in connection with this project. All panel members contributed actively to the development of the content of the EURO-FORTA List.

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F O R T A – Physician’s guide^{1,2,5,7}

1. FORTA is evidence-based + real-life-oriented (factors such as compliance issues, age-dependent tolerance and frequency of relative contraindications are considered).
2. Classifications are indication (or diagnosis)-dependent: a medication can receive different FORTA classifications based on differing indications.
3. Contraindications always take precedence over the FORTA-classification (for example, even Class A medications may not be given if allergies are present).
4. FORTA is designed to be a quick and user-friendly clinical tool to aid in the pharmacotherapy of older patients*. The system is not intended to take the place of individual therapeutic considerations or decisions. As with any simplified model, it does allow for exceptions.

F O R T A – Classification System A-D^{1,2,3,4,7}

<p>Class A</p> <p>= Indispensable drug, clear-cut benefit in terms of efficacy/safety ratio proven in elderly patients for a given indication</p>	<p>Class B</p> <p>= Drugs with proven or obvious efficacy in the elderly, but limited extent of effect and/or safety concerns</p>	<p>Class C</p> <p>= Drugs with questionable efficacy/safety profiles in the elderly which should be avoided or omitted in the presence of too many drugs, absence of benefits or emerging side effects; explore alternatives</p>	<p>Class D</p> <p>= Avoid if at all possible in the elderly, omit first and use alternative substances</p>
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* FORTA aims at older patients, has been validated primarily for patients 65 years of age or older with significant comorbidities (3 or more diagnoses and drugs) and should be used in all patients 80 years of age or older will. These target groups are mostly defined as geriatric patients.

The **EURO-FORTA** List^{3,4,5} Delphi Expert Consensus Validation

F	O	R	T	A
A	B	C	D	

**Classification of the most frequently used long-term medications†
for the pharmacotherapy of older patients**

by indication/diagnosis, ranked according to FORTA classification

Newly proposed drugs are mentioned under the respective diagnosis and marked by *; they are listed in greater detail in the second part.

(† long-term defined as > 4 weeks. Please note that the distinction between acute/chronic may not always be clear-cut; exceptions are noted)

ARTERIAL HYPERTENSION	EURO-FORTA Class (Original FORTA class in parentheses if different from consensus results)
Substance/Group	
Renin-Angiotensin system inhibitors ACE inhibitors	A
Angiotensin receptor antagonists	A
Long-acting calcium antagonists, dihydropyridine type, for example amlodipine	A
Betablockers except atenolol	C
Atenolol	D
Diuretics except indapamid	B
Indapamid	A
Alpha blockers	C
Spironolactone	C
Moxonidine	C
Aliskiren	C
Urapidil	C
Clonidine	D
Minoxidil	D
Calcium antagonists, verapamil type	D

	EURO-FORTA Class (Original FORTA class in parentheses if different from consensus results)
CARDIAC INSUFFICIENCY	
Substance/Group	
Renin-angiotensin system inhibitors	A
ACE inhibitors	
Angiotensin receptor antagonists	A
Betablockers (metoprolol, carvedilol, bisoprolol)	A
Diuretics	(B) A
Gliflozins (SGLT2 inhibitors) only those substances which have been approved for this indication (dapgliflozine)	B
Spironolactone	B
Digitalis preparations	C
Ivabradine	C
Iron substitution in patients with iron deficiency	A

ACUTE CORONARY SYNDROME	EURO-FORTA Class (original FORTA class in parentheses if different from consensus results)
Substance/Group	
Renin-Angiotensin-System- Blocker: ACE inhibitors	A
Acetylsalicylic acid	A
Unfractionated heparin and low molecular weight heparin	A
Frequency-lowering betablockers , e.g. metoprolol or bisoprolol	A
Atorvastatin	A
Nitroglycerin spray, single use, acute as on-demand medication	A
Clopidogrel, prasugrel	B A for stent
Thrombolytics, especially rTPA (recombinant tissue-type plasminogen activator)	B
Nitrates, long-term	C
Gp IIb/IIIa antagonists (glycoprotein 2b/3a inhibitors)	C
Ivabradine	C
CHRONIC THERAPY FOLLOWING MYOCARDIAL INFARCTION	EURO-FORTA Class (original FORTA class in parentheses if different from consensus results)
Substance/group	
Renin angiotensin system blockers ACE Inhibitors	A

Acetylsalicylic acid (100 mg/d)	A
Frequency-lowering beta blockers up to 3 years	A
Frequency-lowering beta blockers longer than 3 years	C
Nitroglycerin spray, single use as on-demand medication	A
Influenza vaccination (inactivated subunit vaccines)/pneumococcal immunizations	-
Statins	A B for very old (>85 years) patients
Clopidogrel (12 months after acute coronary syndrome)	A with aspirin intolerance
Nitrates, long-term	C
Fibrates	C
Ezetimibe	C
Amiodarone	C
All other class-I/III antiarrhythmic agents	D
Dihydropyridine antagonists (if no hypertension)	D
Niacin	D

	EURO-FORTA Class (original FORTA class in parentheses if different from consensus results)
STROKE	
Substance/Group	
Acetylsalicylic acid	A
Atorvastatin	A
rTPA (recombinant tissue-type plasminogen activator); only for emergency use	A
Simvastatin	A
Anticoagulants including new oral anticoagulants	A
Clopidogrel	A
Dipyridamole plus acetylsalicylic acid	B

	EURO-FORTA Class (original FORTA class in parentheses if different from consensus results)
ATRIAL FIBRILLATION	
Substance/group	
Frequency-lowering betablockers	A
New Oral Anticoagulants (NOACs)	B
Except dabigatran	C

Oral anticoagulation by vitamin-K-antagonists (e.g. phenprocoumon, warfarin)	B
Alternative: low molecular weight heparin	C
Digoxin	B
Digitoxin	C
Diltiazem, verapamil	C
Class III antiarrhythmic agent amiodarone	C
All other class I or III antiarrhythmic agents	D
Acetylsalicylic acid (100 mg/d)	D
Class III antiarrhythmic agent dronedarone	D

	EURO-FORTA Class (original FORTA class in parentheses if different from consensus results)
CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)	
Substance/group	
Inhalative long-acting parasympatholytic agents	A
Systemic glucocorticoids, acute, short-term use in cases of exacerbation	A
Antibiotics (acute) in cases of exacerbation, after calculated selection and, if necessary, according to antibiogram	A
Long-term administration of oxygen	A
Annual influenza immunizations	-
Pneumococcal immunizations for persons ≥ 65 years	-
Inhalative beta 2 mimetic agents	B
Inhalative glucocorticoids	C
Theophylline	D
Mucolytic agents, e.g, acetyl cysteine, bromhexine	C
Roflumilast	C
Systemic glucocorticoids, chronic use	D
Antitussives: opioid A., e.g. codein; non-opioid A., e.g. butamirate	D
	EURO-FORTA Class (original FORTA class in parentheses if different from consensus results)
OSTEOPOROSIS	
Substance/Group	
Calcium and vitamin D supplements (as prophylaxis for persons ≥65 years)	A
Parenteral bisphosphonates (e.g. ibandronate, IV every 3 months)	A

Denosumab	(A) B
Raloxifene for women	B
Bisphosphonates, oral	B
Teriparatide	C
Alfacalcidol	C
Parathormone	C
Strontium ranelate	D
Nandrolone decanoate	D
Fluoride	D
Hormone replacement therapy (HRT): estrogen, except for perimenopausal)	D
	EURO-FORTA Class
	(original FORTA class in parentheses if different from consensus results)
TYPE II DIABETES MELLITUS	
Substance/group	
DPP4 (Dipeptidylpeptidase) Inhibitors	B
Insulin and insulin analogs (if absolutely necessary)	B
Metformin	(B) A
GLP1 (Glucagon-Like Peptide-1) analogs	B
Acarbose	(B) C
3rd generation sulfonylureas (for example, glimepiride)	C
Glinides (for example, nateglinide)	C
PPAR- γ Ligands (Peroxisomal Proliferator-Activated Receptor gamma)	C
Pioglitazone	
Rosiglitazone	D

Gliflozins (SGLT-2 inhibitors)	(D) C
1st generation sulfonylureas (for example, glibenclamide)	D
DEMENTIA	EURO-FORTA Class (original FORTA class in parentheses if different from consensus results)
Substance/group	
Acetylcholinesterase inhibitors e.g. donepezil, galantamine, rivastigmine (Only if indicated for the present stage of the disease)	B
Memantine	C
Ginkgo biloba	D
Statins	D
Selegiline	D
Nimodipine	D
Ergoline derivatives	D
Piracetam	D
Pyritinol	D
Antioxidants: Vitamin E, selenium, vitamin C	D
Phytotherapeutic agents, e.g. ginseng	D
Hormone preparations, e.g. DHEA (Dehydroepiandrosterone), testosterone	D
Antiphlogistics, e.g. indomethacin	D
Desferrioxamine	D

BEHAVIORAL AND PSYCHOLOGICAL SYMPTOMS OF DEMENTIA (BPSD)	EURO-FORTA Class (original FORTA class in parentheses if different from consensus results)
DEPRESSION	
Substance/group	
SSRI (Selective Serotonin Reuptake Inhibitors) Citalopram/escitalopram, sertraline, fluoxetine in the usual dosages	C
Mirtazapine (15-45mg/d)	C
SNRI (Serotonin-Noradrenalin-Reuptake-Inhibitors) Venlafaxine, duloxetine	C
BPSD: PARANOIA, HALLUCINATION	EURO-FORTA Class (original FORTA class in parentheses if different from consensus results)
Substance/group	
Risperidone (initially 0,5-1 mg/d)	C
Melperone (25-150mg/d)	C
Quetiapine (25-200 mg/d)	C
Aripiprazole (2-15 mg/d)	(D) C
Haloperidol (initially 0.5 mg/d, max. 3 mg/d)	C
Clozapine (10-50 mg/d)	D

<p>BPSD: RESTLESSNESS, AGITATION, (AGGRESSIVENESS)</p>	<p>EURO-FORTA Class</p> <p>(original FORTA class in parentheses if different from consensus results)</p>
<p>Substance/group</p>	
<p>Trazodone (50-200 mg/d)</p>	<p>C</p>
<p>Risperidone (initially 0,5-1 mg/d, Maximum 3 mg/d)</p>	<p>C</p>
<p>Quetiapine (25-200 mg/d)</p>	<p>C</p>
<p>Melperone (25-150 mg/d)</p>	<p>C</p>
<p>Citalopram (10-30mg)</p>	<p>C</p>
<p>Clomethiazole (5-15 mg/d)</p>	<p>D</p>
<p>Pipamperone (20-120 mg/d)</p>	<p>D</p>
<p>BPSD: SLEEP DISORDERS</p>	<p>EURO-FORTA Class</p> <p>(original FORTA class in parentheses if different from consensus results)</p>
<p>Substance/group</p>	
<p>Slow-release melatonin (2-4 mg)</p>	<p>C</p>
<p>Tetracyclic antidepressant Mirtazapine (15-30mg)</p>	<p>C</p>
<p>Tricyclic antidepressant Doxepine (25-50 mg)</p>	<p>D</p>
<p>Zopiclone (3,75-7,5 mg)</p>	<p>C</p>
<p>Zolpidem</p>	<p>C</p>

DEPRESSION Prophylaxis and therapy for patients with moderate to major depression	EURO-FORTA Class (original FORTA class in parentheses if different from consensus results)
Substance/group	
SSRIs (Selective Serotonin Reuptake Inhibitor)	
Sertraline	B
Escitalopram	B
Citalopram	B
Tricyclic antidepressant	
Nortriptyline	C
Tetracyclic antidepressant Mirtazapine	C
SNRIs (Serotonin-Noradrenalin Reuptake Inhibitors)	C
Venlafaxine	
Duloxetine	C
Monoamine oxidase A (MAO) inhibitor Moclobemide	D
Dopamine and norepinephrine reuptake inhibitor Bupropion	C
Vortioxetine	C
Trazodone	C
Olanzapine	C
Quetiapine	C
Benzodiazepines:	D
General	D
Long-acting,	
Short-acting	D
St. John's Wort	D

Agomelatine	D
Selective noradrenaline re-uptake inhibitor Reboxetine	D
BIPOLAR DISORDER	
EURO-FORTA Class (original FORTA class in parentheses if different from consensus results)	
Substance/group	
Quetiapine	B
Lithium	(C) B
Valproic acid	C
Lamotrigine	C
Carbamazepine	D
INSOMNIA / SLEEP DISORDERS	
EURO-FORTA Class (original FORTA class in parentheses if different from consensus results)	
Substance/group	
Melatonin (slow-release)	B
ω 1-Benzodiazepine agonists Zolpidem	C
Zaleplone	C
Non-benzodiazepine hypnotic Zopiclone	C
Butyrophenone derivative Pipamperone	C
Melperone	C

Tetracyclic antidepressant Mirtazapine	C
Tricyclic antidepressant Doxepine	D
Benzodiazepines, e.g.	D
Oxazepam (medium half- life)	D
Triazolam (very short half-life)	D
Antihistamine Diphenhydramin	D
Sigma receptor agonist Opipramole	D
	EURO-FORTA Class
	(original FORTA class in parentheses if different from consensus results)
CHRONIC PAIN	
Substance/group	
Paracetamol (acetaminophen)	A
Opioids, e.g.	
Buprenorphine,	B
oxycodone,	
hydromorphone	
Primary use of a combination of an agonist and an antagonist, e.g. Tilidine/naloxone	C
Primary use of a combination of an agonist and an antagonist, e.g. Oxycodone/naloxone	C
Morphine	C
SSRI (Selective Serotonin Reuptake Inhibitors) / SNRI (Serotonin- Norepinephrine-Reuptake Inhibitor), e.g. venlafaxine (only if absolutely necessary)	C

Antiepileptic agents (only for neuropathic pain)	C
Pregabalin/gabapentin	D
Carbamazepine	D
Metamizole	C
Tricyclic antidepressant amitriptyline (does not apply to doses up to 10mg per day)	D
NSAIDs (nonsteroidal anti-inflammatory drugs, for long-term use), e.g. naproxen	D
Cox-2 inhibitors, e.g. celecoxib	D
Tramadol	C
	EURO-FORTA Class (original FORTA class in parentheses if different from consensus results)
EPILEPSY	
Substance/group	
Levetiracetam	B
Lamotrigine	B
Gabapentin	B
Pregabalin	C
Lorazepam (emergency use)	B
Lorazepam (long-term use)	D

Topiramate	B
Valproic acid	C
Eslicarbazepine	C
Lacosamide	C
Zonisamide	C
Carbamazepine	C
Diazepam (emergency use)	C
Diazepam (long-term use)	D
Midazolam (emergency use)	C
Midazolam (long-term use)	D
Oxcarbazepine	C
Phenytoin	D
Phenobarbital	D
Ethosuximide	D

	EURO-FORTA Class
	(original FORTA class in parentheses if different from consensus results)
PARKINSON'S DISEASE	
Substance/group	
L-DOPA	A
COMT (Catechol-O-Methyltransferase) Inhibitor Entacapone, opicapone	B

Dopamine agonists, e.g.	B
Ropinirole	(B)
Pramipexole	C
Piribedil, quinagolide, rotigotine	B
MAO-B inhibitors	C
Rasagiline	C
Selegiline	C
Glutamate antagonists	D
Amantadine	D
Bromocriptine, cabergoline	D
Anticholinergics	D
Biperidene	D
INCONTINENCE Drug therapy for urge incontinence	EURO-FORTA Class (original FORTA class in parentheses if different from consensus results)
Substance/group	
Fesoterodine	B
Tolterodine	C
Trospium chloride	C
Extended-release Oxybutynin	C
Immediate-release Oxybutynin	D

	EURO-FORTA Class (original FORTA class in parentheses if different from consensus results)
GASTROINTESTINAL ILLNESSES/ CONCOMITANT THERAPY WITH NSAIDs	
Substance/group	
Proton pump inhibitors (PPI), only if absolutely necessary	B
H₂ receptor antagonists	C

	EURO-FORTA Class (original FORTA class in parentheses if different from consensus results)
Anemia	
Substance/group	
Substitution (iron, vitamin B12, folic acid in cases of deficiency)	A
Erythropoetin-stimulating agents (ESA) in patients with renal insufficiency	A
Iron substitution in patients with cardiac insufficiency	
With proof of iron deficiency	-

	EURO-FORTA Class (original FORTA class in parentheses if different from consensus results)
Vaccinations	
Substance/group	
Annual influenza immunizations	A
Pneumococcal immunizations for persons ≥ 65 years	A
Shingles (Herpes Zoster) Vaccination	A

	EURO-FORTA Class (original FORTA class in parentheses if different from consensus results)
ONCOLOGICAL DISEASES: SOLID TUMORS	
INDICATION Substance/group	
BREAST CANCER Adjuvant therapy	
Hormone therapy, e.g.	
Tamoxifen	B
Aromatase inhibitors	B
Immunotherapy / "Targeted" therapy Trastuzumab	B
Chemotherapy, e.g.	
CMF (Combination Cyclophosphamide, Methotrexate, 5- Fluorouracil)	C
AC/EC Regimen (Anthracycline/ Epirubicin, Cyclophosphamide)	C
BREAST CANCER Advanced Stage	

Hormone therapy, e.g. tamoxifen, aromatase inhibitors	B
Immunotherapy/ Targeted Therapy Trastuzumab/ lapatinib	B
Chemotherapy, e.g. anthracyclins, taxanes	C
VEGF (Vascular Endothelial Growth Factor) Inhibition Bevacizumab	D
COLORECTAL CARCINOMA Adjuvant Therapy	
FOLFOX Regimen (Folinic acid, Fluorouracil, Oxaliplatin)	C
5-Fluorouracil based infusion regimen	C
Capecitabine	C
COLORECTAL CARCINOMA Advanced stage	
Chemotherapy FOLFOX (Folinic acid, Fluorouracil, Oxaliplatin)	C
VEGF (Vascular Endothelial Growth Factor) Inhibition Bevacizumab	C
EGFR (Epidermal-Growth-Factor-Receptor) Inhibition Cetuximab	C
Panitumumab	C
BRONCHIAL CARCINOMA Adjuvant therapy	
Adjuvant chemotherapy (Cisplatin-based)	C
BRONCHIAL CARCINOMA Advanced Stage	
Docetaxel	B
Vinorelbin	B
Primary combination therapy Cisplatin/gemcitabin, or cisplatin/vinorelbin	C

GASTRIC CANCER	
ECF Regime (Epirubicin, Cisplatin, 5-Fluorouracil)	B
ONCOLOGICAL DISEASES HEMATOLOGICAL NEOPLASIAS	EURO-FORTA Class (original FORTA class in parentheses if different from consensus results)
INDICATION Substance/group	
MDS (Myelodysplastic syndrome) Azacytidine	B
AML (Acute myeloid leukemia) Anthracyclines + cytosine arabinoside (cytarabine)	B
CLL (Chronic lymphatic leukemia) Chlorambucil, Fludarabin, Bendamustin	B
CLL Obinutuzumab	B
CLL Rituximab	B
Multiple myeloma	B
Primary therapy with	B
Prednisolone	B
Thalidomide	B
Melphalan	B
Bortezomib	B
Lenalidomide	B
CLL	C

Ibrutinib	
CLL Idelalisib	C
	EURO-FORTA Class (original FORTA class in parentheses if different from consensus results)
ONCOLOGICAL SUPPORTIVE THERAPY	
Substance/group	
G-CSF (Granulocyte Colony Stimulation Factor)	A
Antiemetic agents (e.g. 5-HT receptor inhibitors)	A
Erythropoiesis Stimulating Agents, ESA	B

Delphi Expert Consensus Validation⁵

F	O	R	T	A
A	B	C	D	

NEW SUBSTANCES/INDICATIONS SUGGESTED BY EXPERTS Results to be corroborated in future consensus/research projects

Classification of long-term medications†
for the pharmacotherapy of older patients
by indication/diagnosis, ranked according to FORTA classification

(†long-term defined as > 4 weeks. Please note that the distinction between acute/chronic may not always be clear-cut; exceptions are noted)

EXISTING INDICATION vaccinations Substance/group	Rater-based FORTA Class
COVID-19 vaccination	A

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