Wat is COPD?

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ZOL Genk

Inhoud

- Wat is obstructief longlijden: longfunctioneel
- COPD?
- Wat bepaalt de ernst van obstructie?
- Behandeling
- Differentieel diagnose

Longfunctietesten

Date			061108	
Time			14:09	
FVC	[L]	5.03	5.31	105
FEV 1	[L]	4.16	4.27	103
FEV 1 % FVC	[%]		80.44	
MMEF 75/25	[L/s]	4.62	3.98	86
PEF	[L/s]	9.59	9.11	95
FEF50 % FIF50	[%]		73.14	
FRC-He	[L]	3.42	3.53	103
ERV	[L]	1.52	2.14	141
RV-He	[L]	1.91	1.39	73
VC max	[L]	5.26	5.31	101
TLC-He	[L]	7.22	6.70	93
RV % TLC-He	[%]	28.00	20.79	74
DLCO SB	[mmol/min/kPa]	11.48	9.61	84
DLCO/VA	[mmol/min/kPa/L]	1.59	1.44	91
VIN	[L]	5.26	4.99	95
R occ	[kPa*s/L]	0.30	0.29	98

- Spirometrie
- Residueel volume
- Debiet-volume curve
- Diffusiecapaciteit (DL_{CO})

Ventilatoire capaciteit: spirometrie

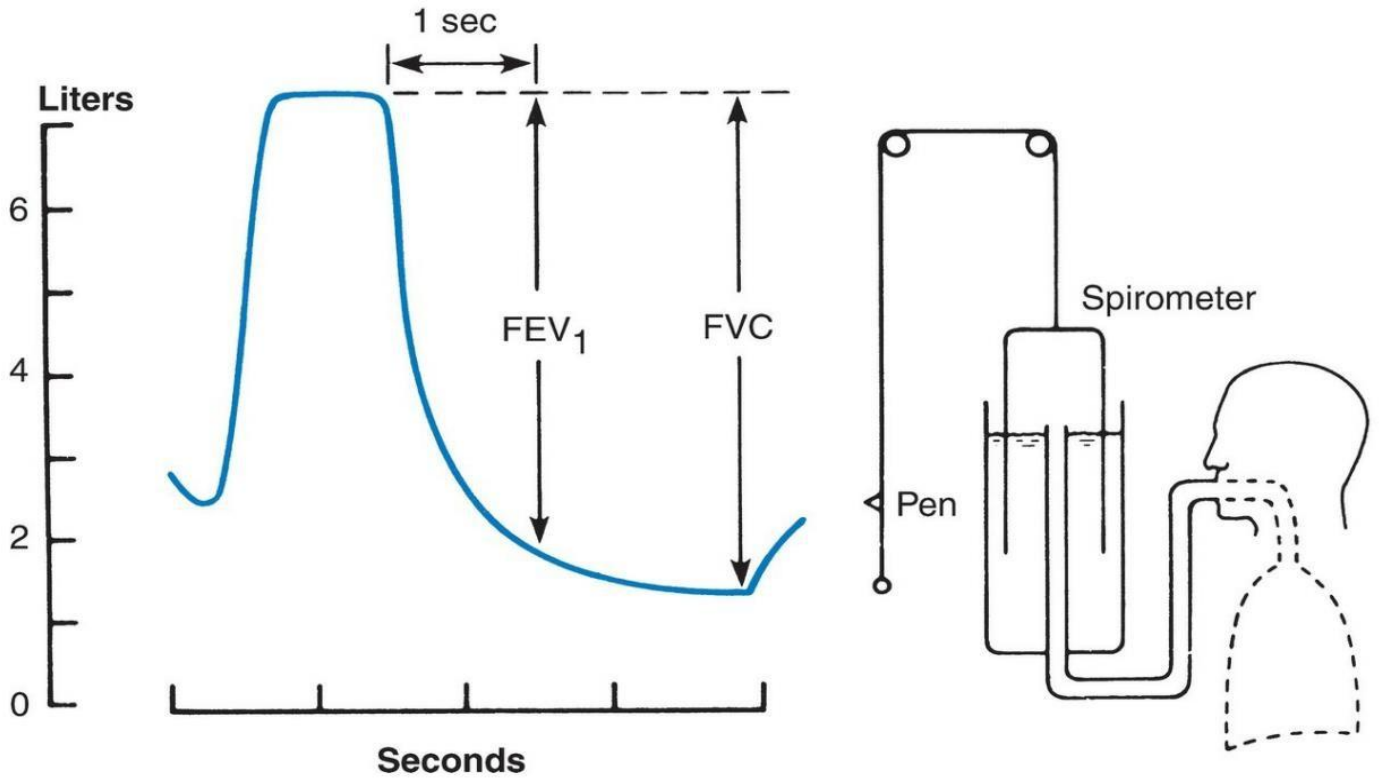
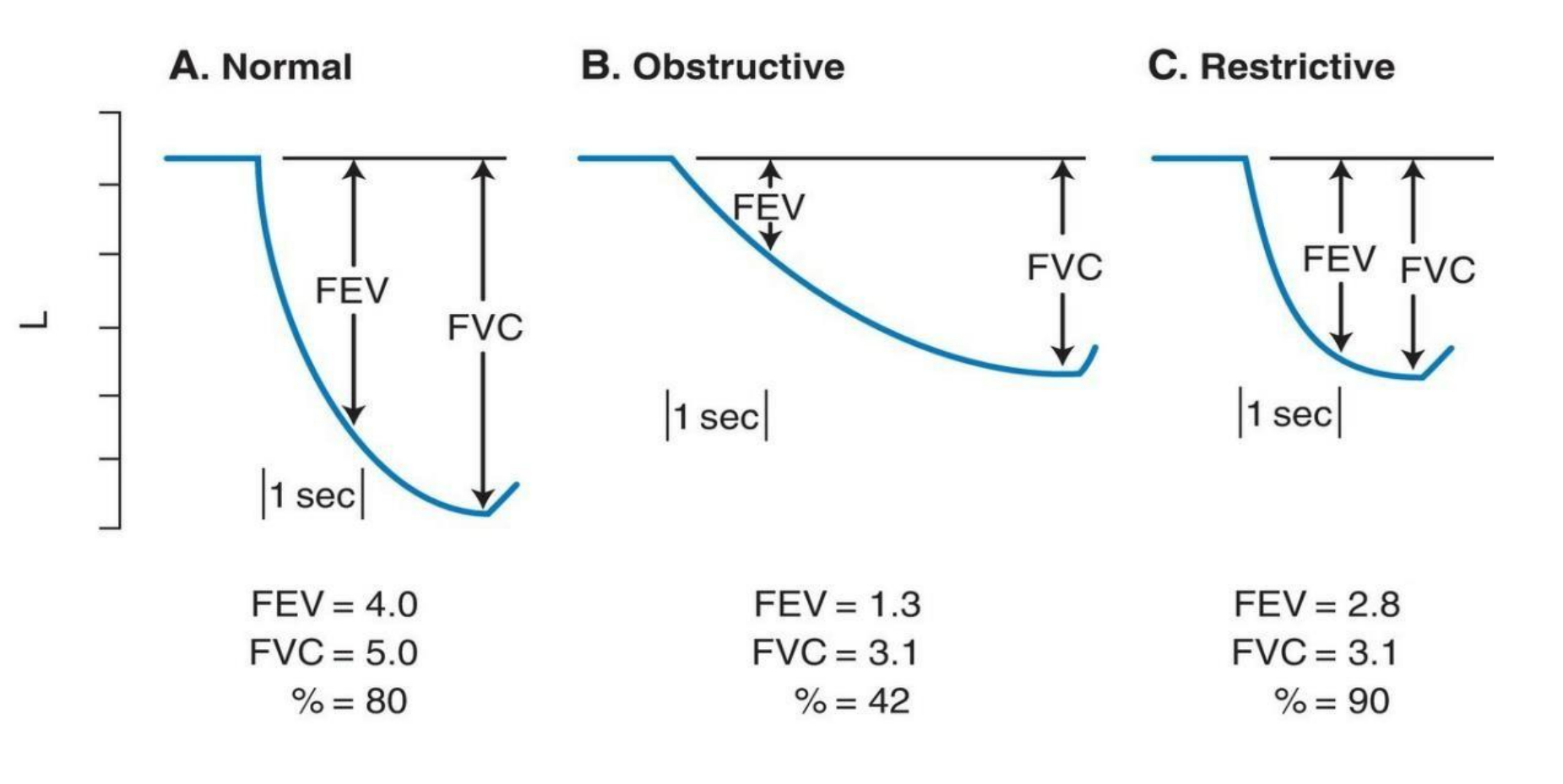
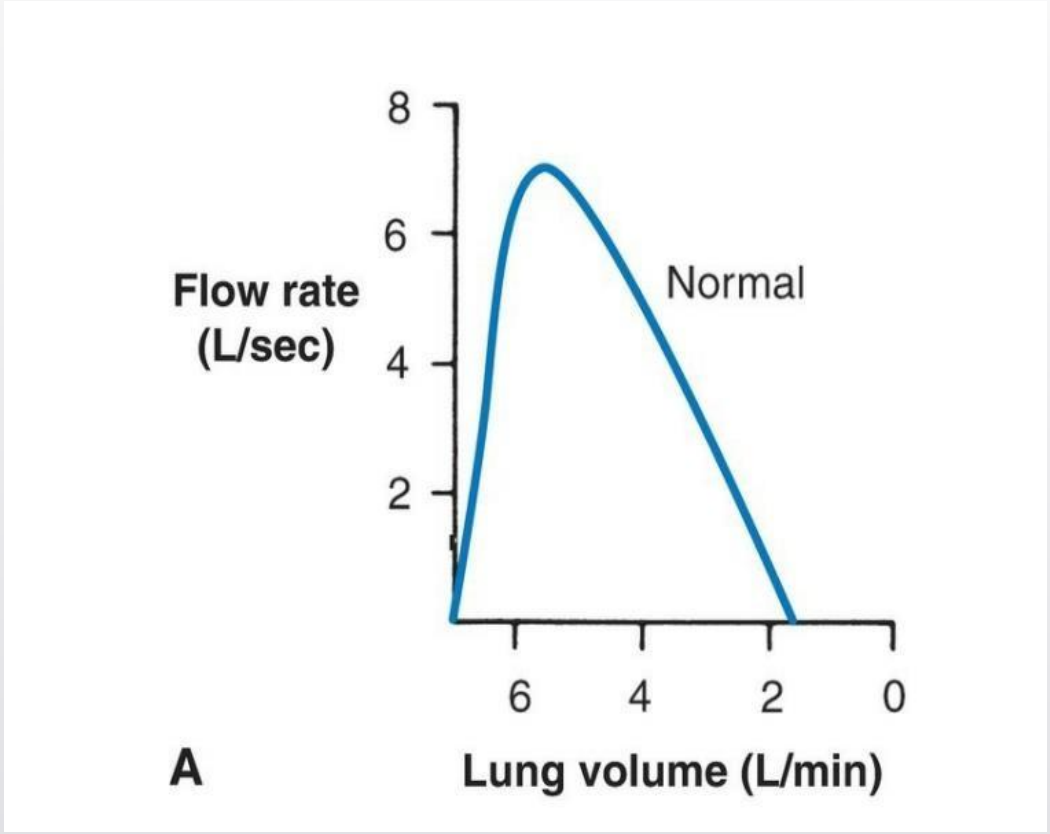


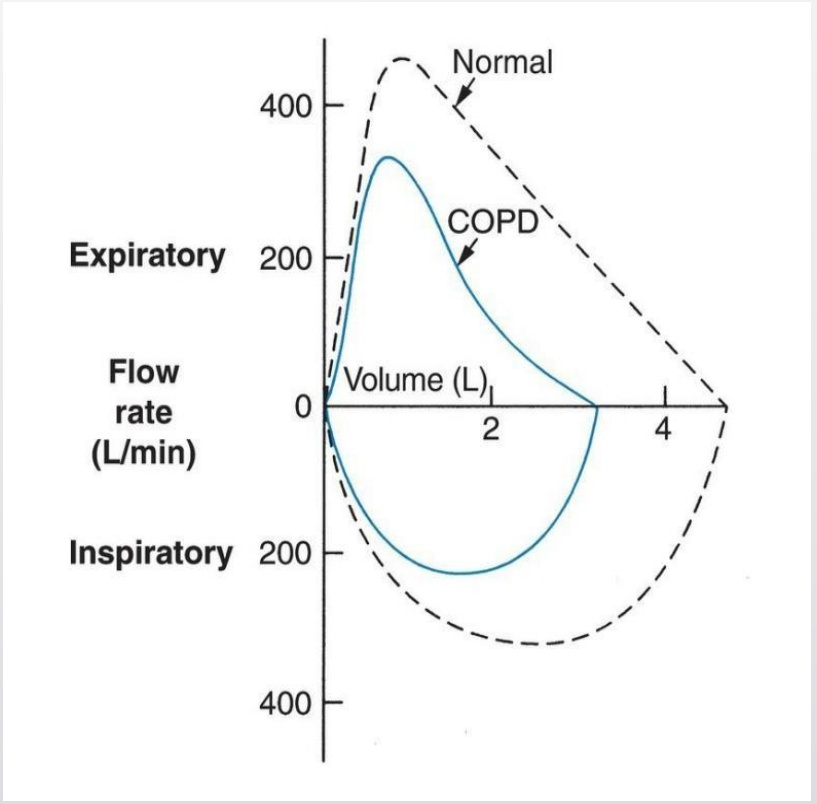
Figure 1.1. Measurement of forced expiratory volume (FEV_1) and forced vital capacity (FVC).

Ventilatoire capaciteit: spirometrie

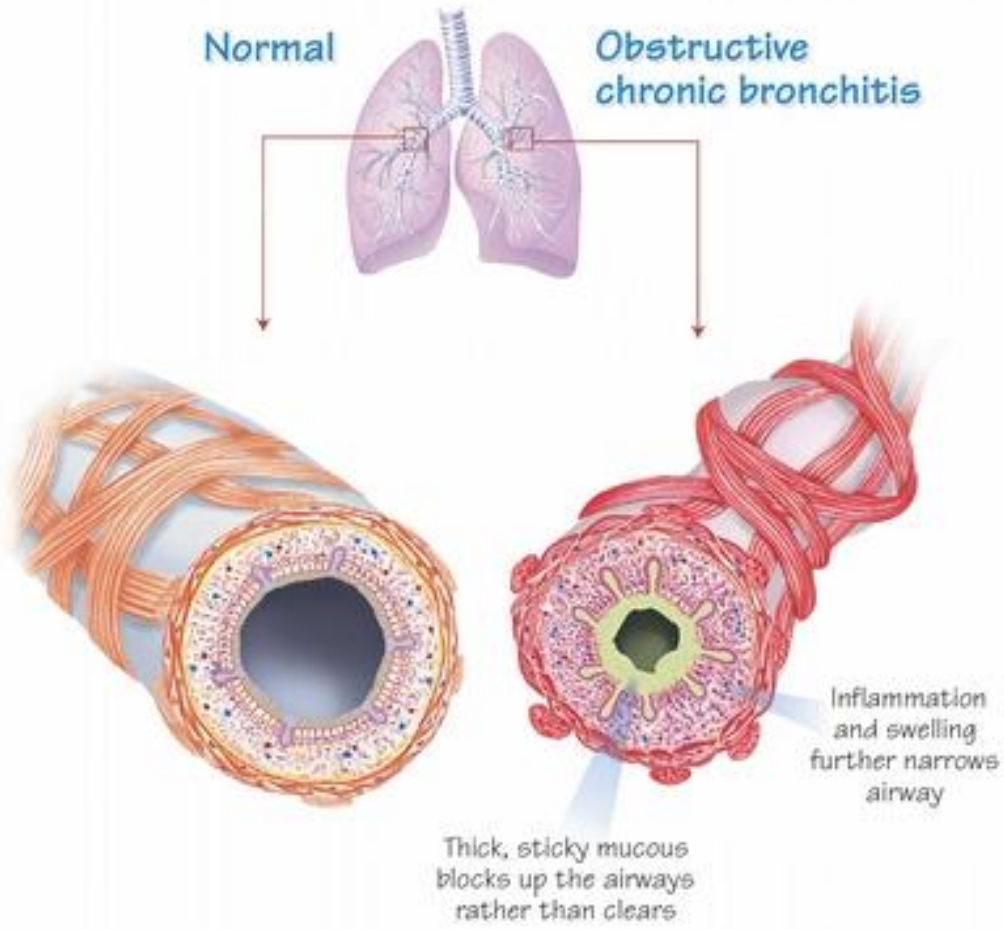


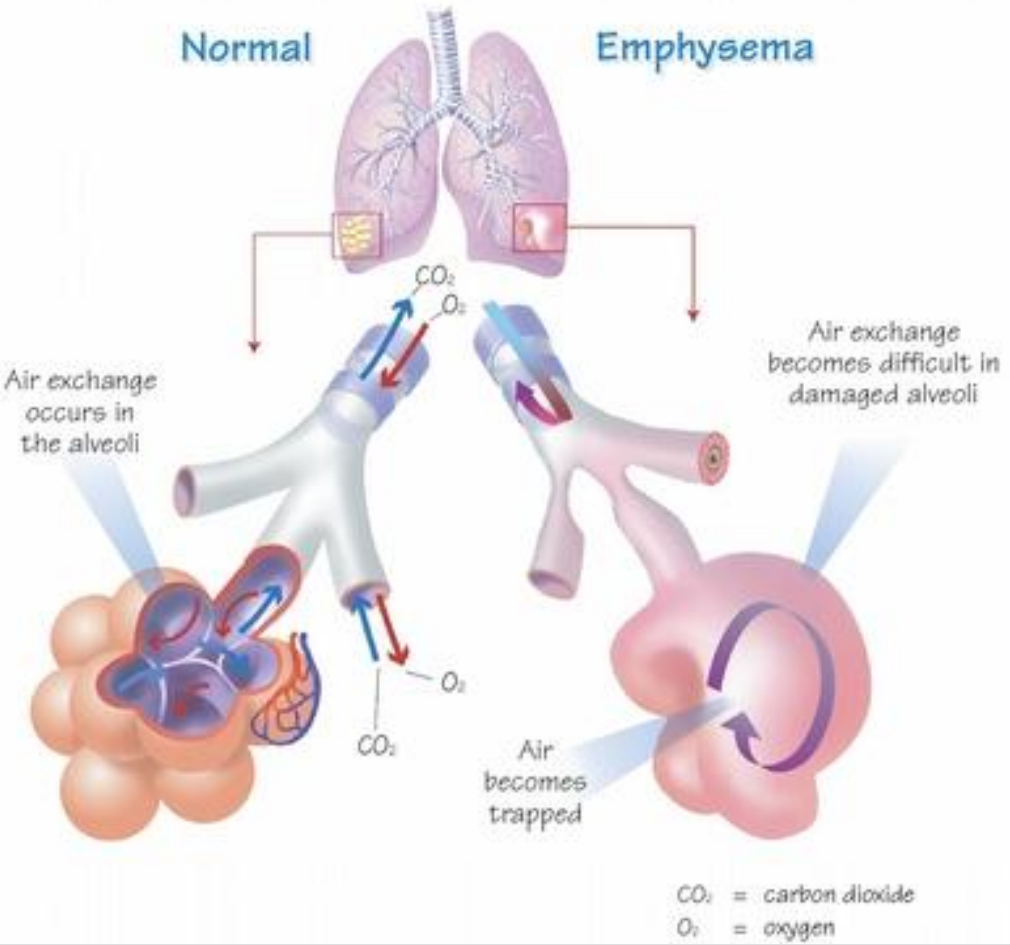
Ventilatoire capaciteit: Flow volume curve





OBSTRUCTIVE CHRONIC BRONCHITIS AND/OR EMPHYSEMA





- COPD is an umbrella term for various clinical entities with multiple causes resulting in airflow limitation that is not fully reversible. Hence, COPD is better defined as a clinical syndrome characterized by chronic respiratory symptoms, structural pulmonary abnormalities (airways disease, emphysema, or both), lung function impairment (primarily airflow limitation that is poorly reversible), or any combination of these. Patients with COPD are at a higher risk than patients without COPD for the development of coexisting conditions that are associated with poor outcomes, including death.

- COPD is heden de 3de belangrijkste doodsoorzaak in de wereld.[1]
- Door expositie aan riscofactoren en veroudering.
- Meer dan 3,2 milj mensen stierven in 2017 tgv COPD, 6% van alle overlijdens.
- 4.4 milj overlijdens te verwachten in 2040 (prevalentie rond 10%)
- In België 700,000-800,000 patiënten

1. Lozano R, Naghavi M, Foreman K, et al. Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet* 2012; **380**(9859): 2095-128. 2. Mathers CD, Loncar D. Projections of global mortality and burden of disease from 2002 to 2030. *PLoS Med* 2006; **3**(11): e442.


STERFTE IN BELGIË
2018
4580 [1]
12 /DAG [1]
24
2050
13,7% [2]
VERWACHTE PREVALENTIE
3DE GROOTSTE DOODSOORZAAK IN EUROPA [3]
2050
49,5 miljoen [2]
COPD-PATIËNTEN
STIJGING VAN 40% [2]
BIJ DIAGNOSE IS VAAK AL
60% [4]
VAN DE LONGCAPACITEIT VERLOREN
BRON: 1) HTTPS://EUROHEALTHOBSERVATORY.WHO.INT/DOCS/LIBRARIESPROVIDER3/COUNTRY-HEALTH-PROFILES/CHP2021PDF/BELGIUM-COUNTRYHEALTHPROFILE2021.PDF?SFVRSN=D-63DA679_9&DOWNLOAD=TRUE - 2) HTTPS://ERJ.ERSJOURNALS.COM/CONTENT/58/SUPPL_65/OA2866 - 3) WHO DATA ASSESSED IN MAY 2022: HTTPS://WWW.WHO.INT/NEWS-ROOM/FACT-SHEETS/DETAIL/CHRONIC-OBSTRUCTIVE-PULMONARY-DISEASE-(COPD)#:~:TEXT=COPD%20IS%20INCLUDED%20IN%20THE,IN%20A%20NUMBER%20OF%20WAYS - 4) VOORSTEL VAN RESOLUTIE DOC 55 2259/001. HTTPS://WWW.DEKAMER.BE/KVVCR/SHOWPAGE.CFM?SECTION=/NONE&LEFTMENU=NO&LANGUAGE=NL&CFM=/SITE/WWWCFM/FLWB/FLWBN.CFM?LANG=N&LEGISLAT=55&DOSSIERID=2259
COPD kan snel en betrouwbaar vastgesteld worden met een spirometrie.
Contacteer uw huisarts of longarts voor een check-up van uw longen.

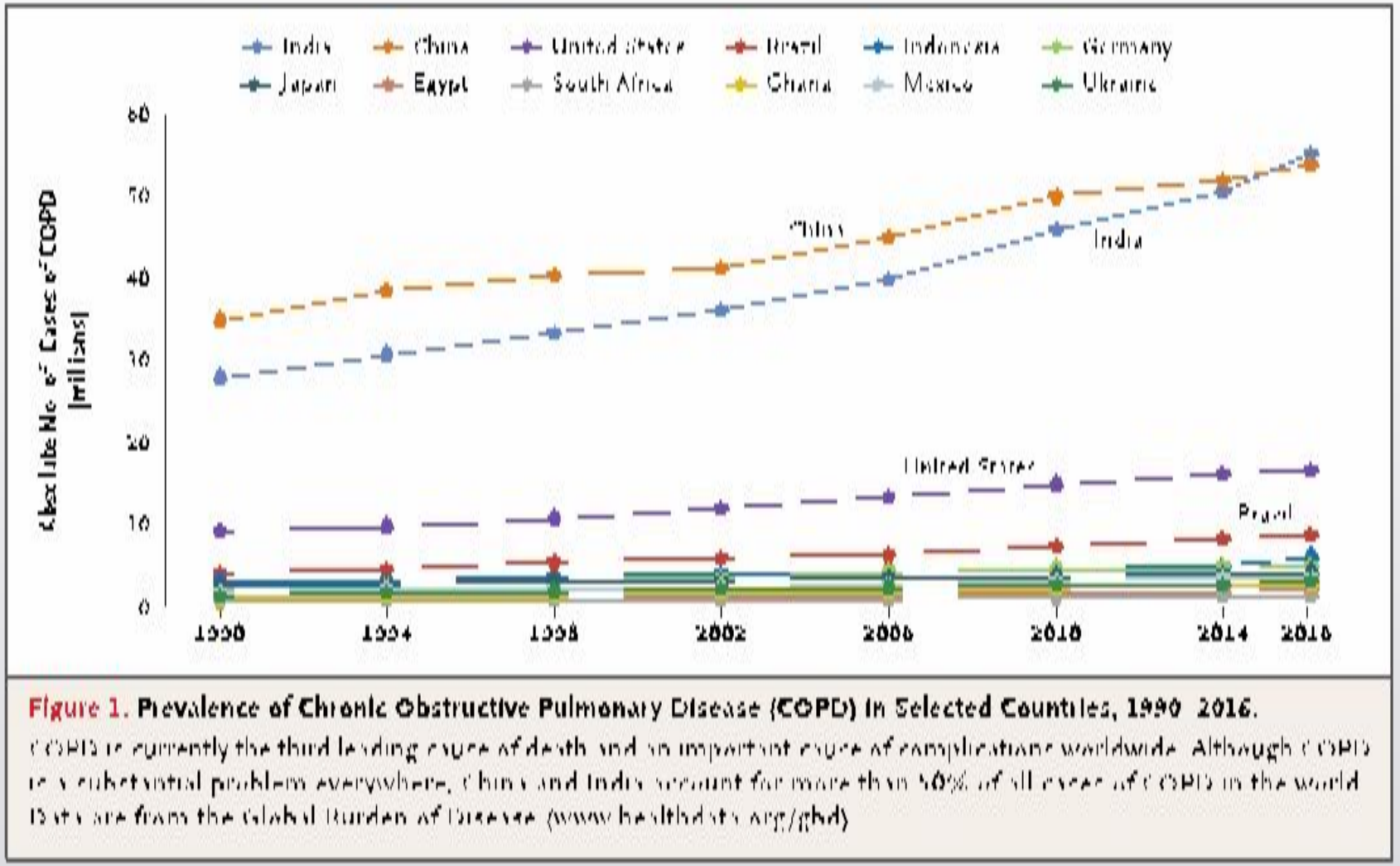


Figure 1. Prevalence of Chronic Obstructive Pulmonary Disease (COPD) in Selected Countries, 1990–2016.

COPD is currently the third leading cause of death and an important cause of complications worldwide. Although COPD is a substantial problem everywhere, China and India account for more than 50% of all cases of COPD in the world. Data are from the Global Burden of Disease (www.healthdata.org/ghdx).

Bartholomé. N Engl J Med

1. COPD is a preventable disease
   - Rookstop, adequate behandeling van astma
2. COPD is treatable
3. Extrapulmonary effects
   - Spieraantasting, cardiovasculaire effecten, depressie, osteopenie, chronische infecties
4. Personen met eenzelfde rookgedrag toch een ander effect op longen
   - Ernst wordt bepaald door FEV1
5. Obstructie
   - Door combinatie van kleine luchtwegobstructie, parenchymdestructie (emphyseem), luchtwegovergevoeligheid
6. Niet volledig
7. reversibel
   - Inflammatie in de long
   - Door toxische gassen of partikels
   - Ook door infecties

COPD risicofactoren

- Genetisch(Alfa-1-antitrypsinedeficientie -1-3% van de COPD)
- Tabak
  - 50% van de rokers ontwikkelen COPD
  - Moeder rookt tijdens zwangerschap
    - Invloed op longontwikkeling kind
- Omgeving: stof, gassen en dampen
- Indoor luchtverontreiniging
- Leeftijd
  - FEV1 daalt met leeftijd, effect van roken veel later
- Infecties
  - Risico op exacerbaties
- Astma
- Geslacht
    - M>V, nu M=V

COPD: co-morbiditeit

- Ischemische hartziekten
- Atriale fibrillatie
- Hartfalen
- Osteoporose
- Longkanker
- Reflux
- Angst en depressie

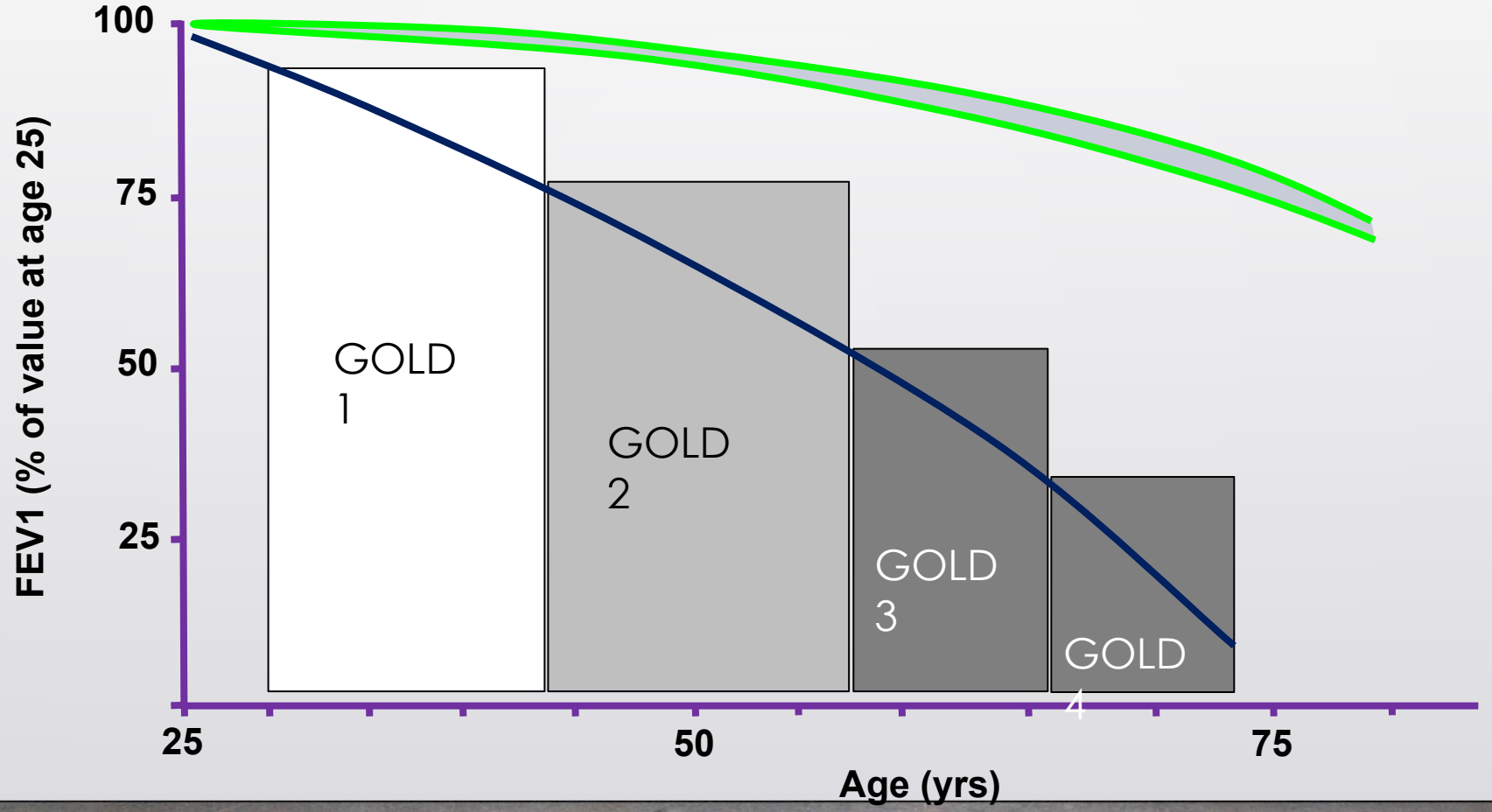
CT thorax

- Geeft een indicatie voor emfyseem fenotype of bronchitis fenotype
- Geeft ook indicatie over bronchiectasiën
- Longkanker
- Interstitiële afwijkingen
- Coronaire calcificaties
- Cardiomegalie
- Vergroting van pulmonale vasculatuur
- Thoracale wand en mediastinale afwijkingen
- Osteoporose
- Sarcopenie
- Hiatale hernia

- CT thorax bij alle COPD patienten

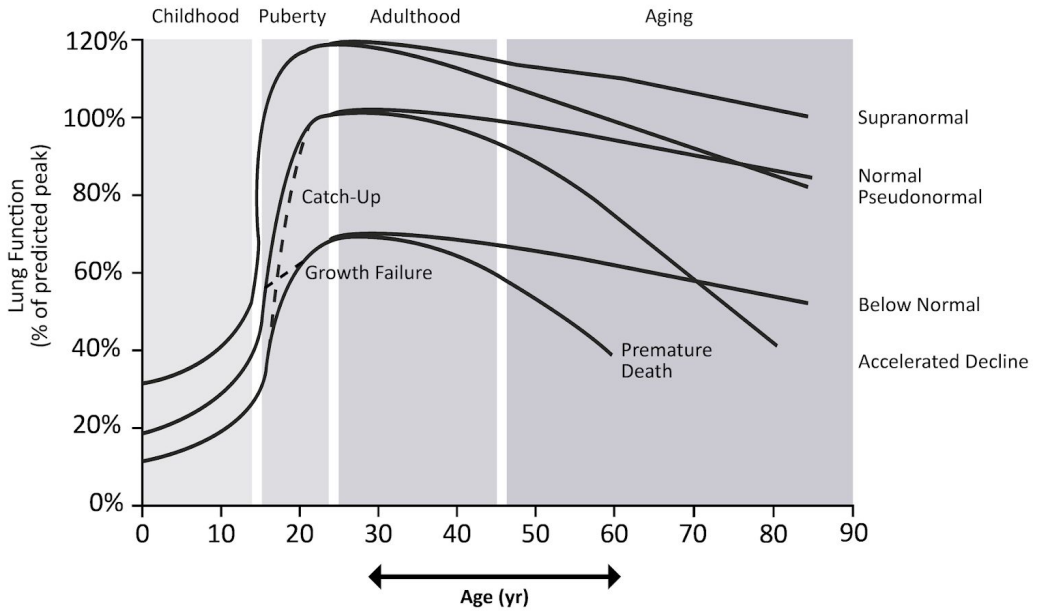
Diagnose: post bronchodilator FEV1/FVC ratio < 0,7 (of LLN)

- Stage I: Mild $FEV_1 \geq 80\%$ predicted
- Stage II: Matig $50\% \leq FEV_1 < 80\%$ predicted
- Stage III: Ernstig $30\% \leq FEV_1 < 50\%$ predicted
- Stage IV: Zeer ernstig $FEV_1 < 30\%$ predicted


100
75
50
25
FEV1 (% of value at age 25)
GOLD 1
GOLD 2
GOLD 3
GOLD 4
25
50
75
Age (yrs)

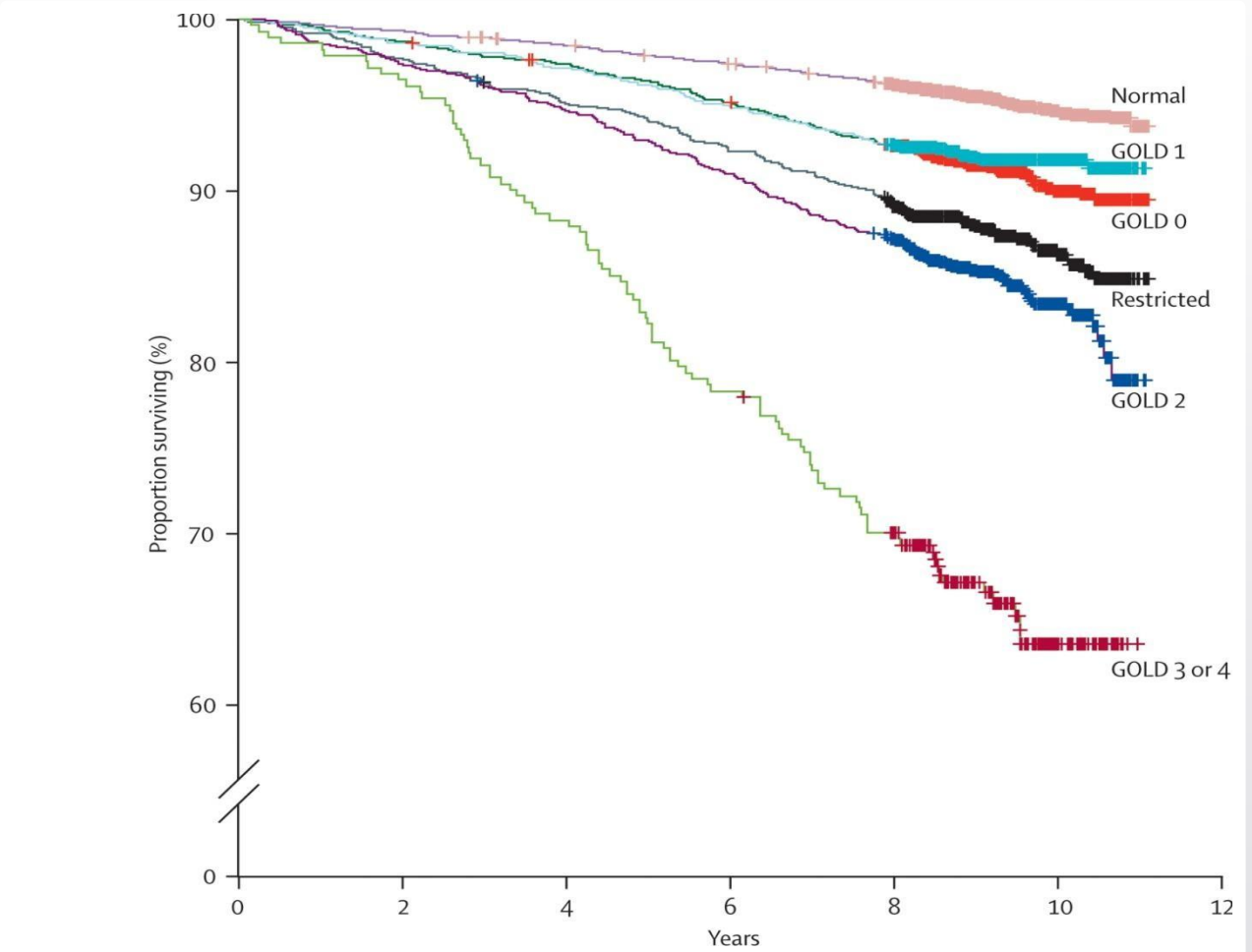
FEV1 Trajectories (TR) Over the Life Course

Figure 1.1



Modified from: Agusti A, Hogg JC. Update on the Pathogenesis of Chronic Obstructive Pulmonary Disease. N Engl J Med. 2019;381:1248-56.

COPD



Number at risk	15299	15116	14906	14631	14135	3797
Normal	8604	8544	8467	8369	8152	2244
Restricted	1325	1294	1259	1222	1157	321
GOLD 0	2192	2163	2131	2083	1991	572
GOLD 1	1687	1663	1639	1602	1548	361
GOLD 2	1491	1452	1410	1355	1287	299
GOLD 3 or 4	281	271	248	220	191	48

The Lancet 2007; 370:765-773 (DOI:10.1016/S0140-6736(07)61380-4)

- Bode index:
  - FEV1
  - 6MWT afstand
  - mMRC
  - BMI

Table 2. Variables and Point Values Used for the Computation of the Body-Mass Index, Degree of Airflow Obstruction and Dyspnea, and Exercise Capacity (BODE) Index.*

Variable	Points on BODE Index			
	0	1	2	3
FEV$_1$ (% of predicted)†	≥65	50–64	36–49	≤35
Distance walked in 6 min (m)	≥350	250–349	150–249	≤149
MMRC dyspnea scale†	0–1	2	3	4
Body mass index¶	>21	≤21		

- □ Score op 10, hoe hoger hoe groter de kans op mortaliteit

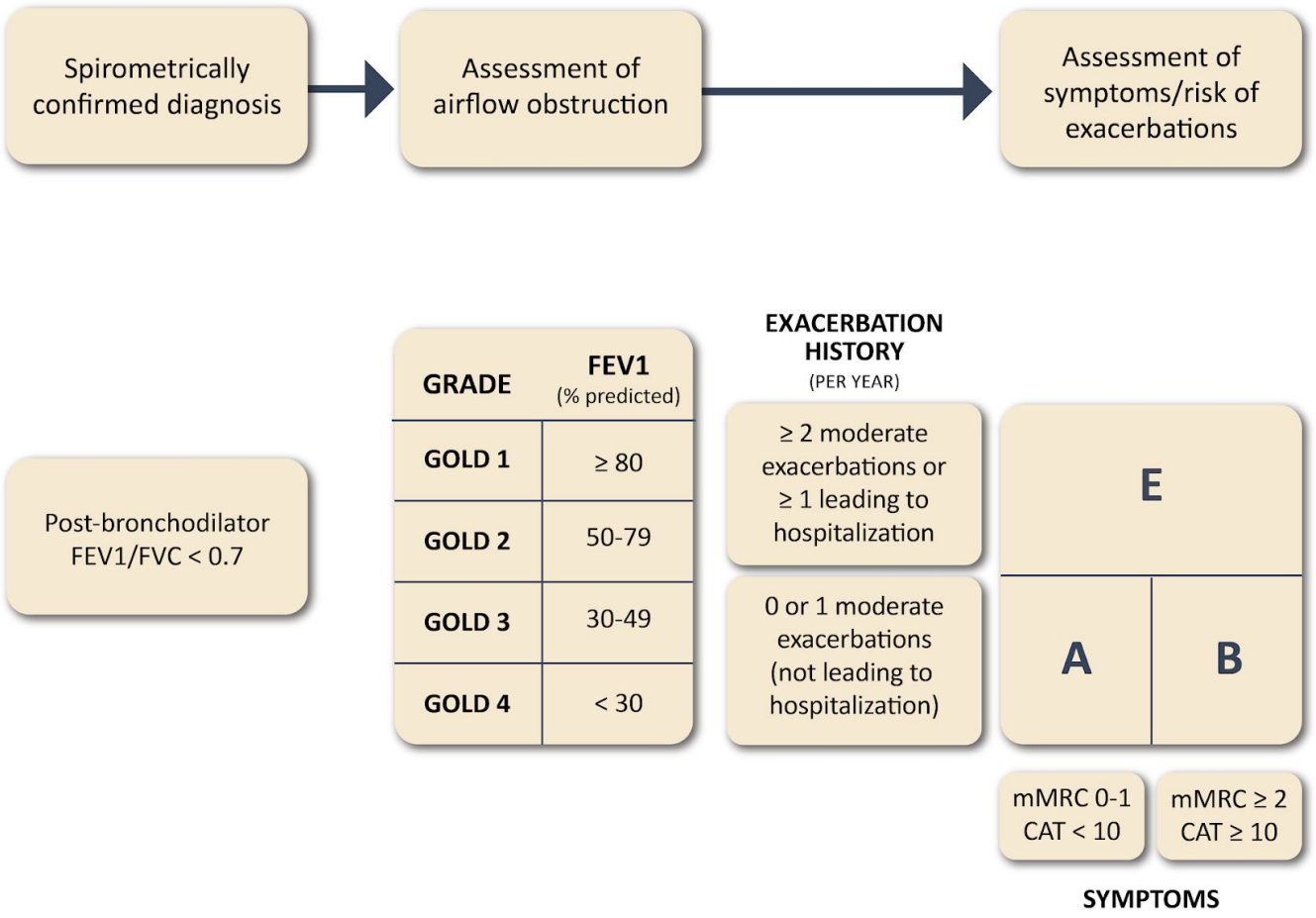
Bartholomé. N Engl J Med

Behandeling

- Preventie(roken/luchtverluiling)
- Inhalatietherapie
- Rookstop
- Vaccinaties (influenza-pneumokok-covid-RSV)
- Systemische therapie
- Revalidatie
- Zuurstoftherapie
- Longvolume reductie (heelkundig-endoscopisch)
- Longtransplantatie
- Levenseinde

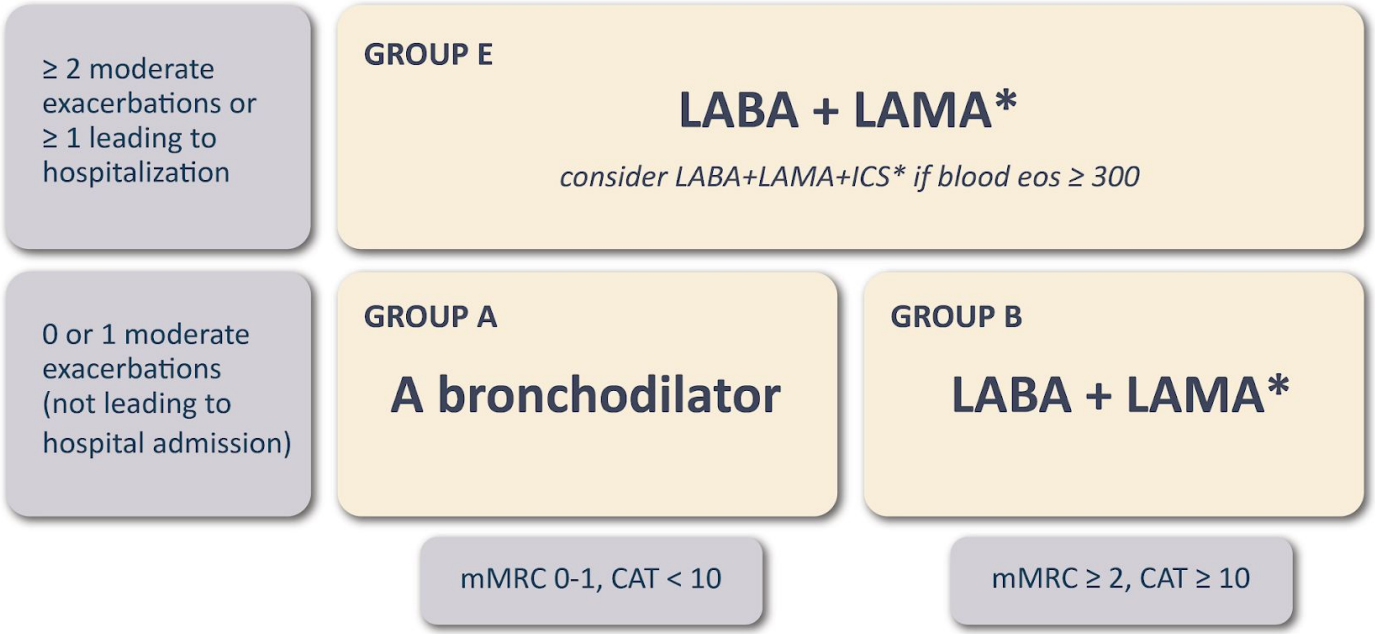
GOLD ABE Assessment Tool

Figure 2.10



Initial Pharmacological Treatment

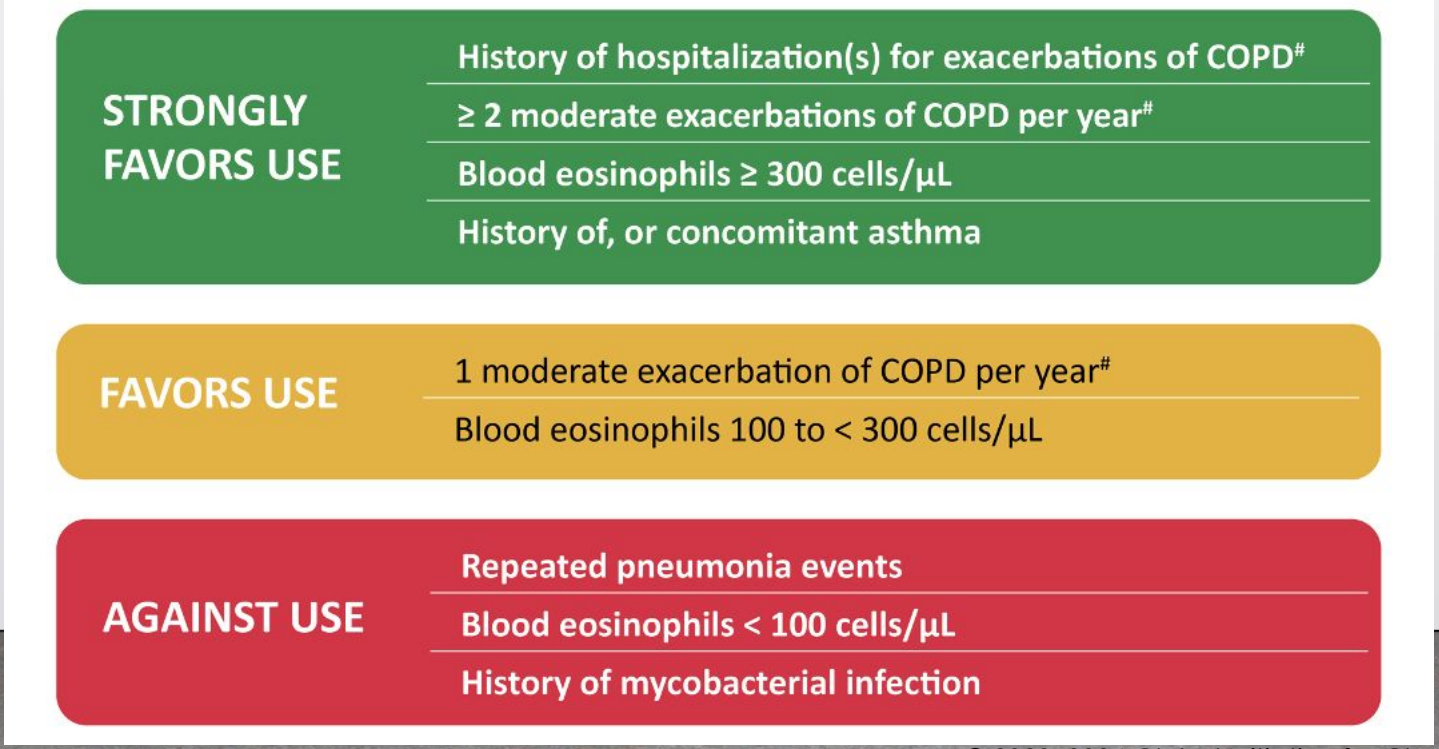
Figure 3.7



*Single inhaler therapy may be more convenient and effective than multiple inhalers; single inhalers improve adherence to treatment

Exacerbations refers to the number of exacerbations per year; eos: blood eosinophil count in cells per microliter; mMRC: modified Medical Research Council dyspnea questionnaire; CAT™: COPD Assessment Test™.

- ICS enkel bij ernstig COPD
- **En** frequent exacerbator
- **En** eosinofilie > 300
- Individueel te bekijken voor sommigen meer kwaad als goed

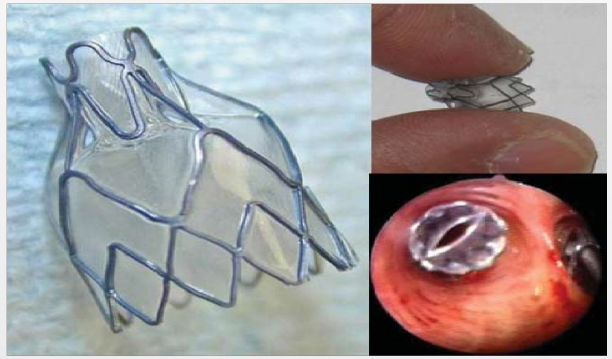


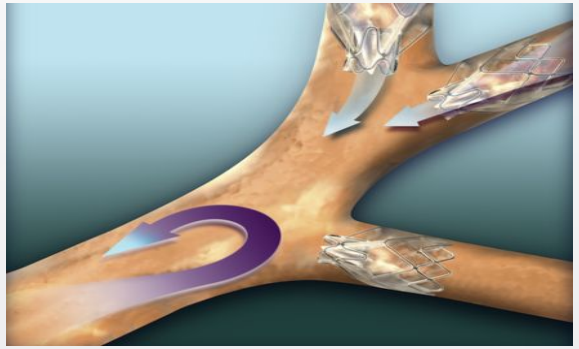
Zuurstof

- Acuut
- 3 maanden/jaar

- Chronisch
- Bloedgassen (PO2 onder 55mmHg of onder de 60 mmHg (maar tekens van hartbelasting of een verhoogd hematocriet)
- Nachtelijke desaturatie (30% van de nacht onder 90%)
- 6 min wandeltest (zuurstof daling onder 88%)
- Palliatief statuut

Longvolumereductie





Identificatie van de emfysemateuze longlob

⬇

Endobronchiaal unilaterale klepjes plaatsing in de hoofdbronchi (3-4)

⬇

Progressieve deflatie – atelectase van de longlob

⬇

Reductie van de hyperinflatie

⬇

Reductie van de dyspnea

COPD Opstoot

- Toename in dyspnoe, hoest of sputum purulentie zonder symptomen van een bovenste luchtweginfectie

- Verergering van de respiratoire symptomen, behoudens de dagelijkse variatie, die noodzaak hebben aan medicamenteuze aanpassing

- Oorzaak
  - Viraal; rhinovirus, coronavirus, influenza, parainfluenza, adenovirus, RSV
  - Bacterieel: H.Influenzae, Moraxella c., S.pneumoniae, Pseudomonas aeruginosa, chlamydia pneumoniae
  - Luchtvervuiling
    - SO_2, NO_2, O_3, partikels ($PM_{10-2,5}$)

Systemische therapie: CS

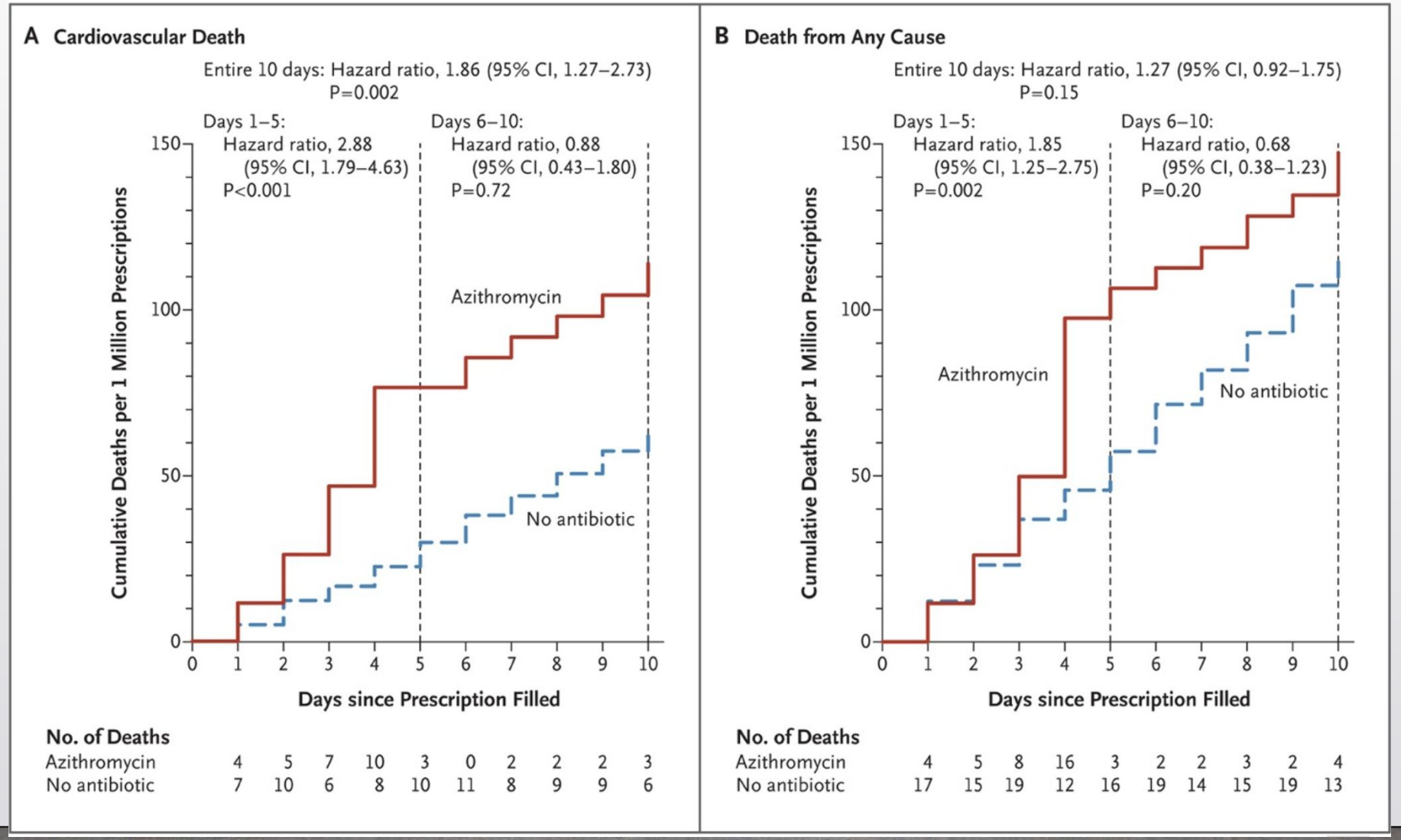
- GOLD: “Long-term monotherapy with oral corticosteroids is not recommended in COPD (Evidence A).”
-

- Nevenwerkingen:
  - Diabetes
  - Osteoporose
  - Cushing syndroom
  - Spierzwakte … cfr korte termijn analyse
  - Neuropathie
  - …

→ 5 dagen 32 mg (exacerbatie)

Systemische therapie: Antibiotica

- Soms bij purulente secretie
- Ernstig COPD



Albert et al. NEJM 2017

Other Causes of Chronic Cough

Figure 2.2