How Long Before a Disease Is Diagnosed? Years From Onset to Diagnosis, by Condition

For most major chronic diseases, the disease process starts years or even decades before diagnosis: about 3–7 years for many conditions where the delay runs from first symptoms, and 10–40+ years for silent processes such as hardening of the arteries, bone loss, Alzheimer's pathology and many cancers.

TL;DR

- **The longest silent periods are measured in decades.** Coronary atherosclerosis is already visible in teenagers, nih about 30–50 years before a typical first heart attack. Alzheimer's amyloid builds up 15–25 years before dementia. alzforum + 2 Many cancers, including colorectal, pancreatic, cervical and ovarian, take 10–25 years to grow from the first precursor or mutation to a diagnosed cancer. hhmi + 2
- **Symptom-to-diagnosis delays are usually 3–10 years**, even though symptoms are present the whole time. Examples are type 2 diabetes (about 4–12 years undiagnosed), endometriosis (about 7 years), axial spondyloarthritis (pooled mean 6.7 years across 64 studies, Zhao 2021), bipolar disorder (5.8 years in the Dagani 2017 meta-analysis and 9.1 years in Keramatian 2025), celiac disease in adults (about 3–10 years) and rare diseases (4.7 years on average in the EURORDIS Rare Barometer survey of 6,507 people). COPD is another example: in a UK study of 38,859 patients (Jones 2014), chances to diagnose were missed in 85% of patients during the 5 years before diagnosis, and in 42% as far back as 11–15 years.
- **Two kinds of numbers appear below and should not be mixed up.** "Biological onset" numbers are modeled or inferred, such as mutation clocks, autopsy studies and biomarkers. "First symptoms" numbers come from patient histories. Screening lead times, such as 5–12 years for PSA, partly reflect overdiagnosis. rand ejcancer

Main table

Years (onset → diagnosis)	Health problem	What starts the clock	Ref
~30–50 (inferred)	Heart attack / coronary artery disease	Fatty streaks and plaques in arteries, already present at age 15–19 nih	PDAY 1993 PDAY JAMA 1999
~20–40 (inferred)	Osteoporosis → first fragility fracture	Bone loss after peak bone mass (~age 30), speeding up at menopause merckmanuals	Merck Manual NIAMS
Up to ~25 (modeled); ~4 preclinical	Colorectal cancer	Adenoma (polyp) appears; then a silent but screen-detectable cancer phase rand	Brenner 2013 CISNET validation

Years (onset → diagnosis)	Health problem	What starts the clock	Ref
15–25	Alzheimer's disease	Amyloid buildup in the brain (biomarkers) clinicaltrials alzforum	DIAN, Alzforum DIAN-TU protocol
~15–20 (modeled)	Pancreatic cancer	First cancer-driving mutation (avg 11.7 years to non-metastatic tumor, +6.8 years to metastasis, Yachida 2010)	Yachida 2010 HHMI
15–20 (5–10 with weak immunity)	Cervical cancer	Persistent HPV infection who	WHO
>10, often 20+ (modeled)	Ovarian cancer	Whole-genome doubling in tumor cells biorxiv + 3	Gerstung 2020 Crick summary
~10 (non-motor); 4–6 (neuron loss)	Parkinson's disease	Smell loss, sleep disorder, constipation; dopamine-neuron loss sciencedirect wiley	Gaenslen 2011 Prodromal PD review
Up to 15–20 (missed chances)	COPD	Lower-respiratory symptoms seen by doctors thelancet nih	Jones 2014
4–7 to 9–12	Type 2 diabetes	High blood sugar (dated back from retinopathy at diagnosis) nih	Harris 1992 Porta 2014
5–12 (lead time)	Prostate cancer	PSA-detectable cancer vs. clinical diagnosis rand ejcancer	Draisma 2003 ERSPC lead time
~3–10	Celiac disease (adults)	First symptoms	Norström 2011 Poland 2022
~7 (range 1.5–11)	Endometriosis	First symptoms (pelvic pain, painful periods) rbmojournal tandfonline	Scoping review 2024 Netherlands 2025
~7	Axial spondyloarthritis (ankylosing spondylitis)	First symptoms (inflammatory back pain) liverpool	Zhao 2021 meta-analysis
~6–9	Bipolar disorder	First mood episode or symptoms nih sagepub	Dagani 2017 Lublóy 2020

Years (onset → diagnosis)	Health problem	What starts the clock	Ref
~5 (up to 18)	Rheumatoid arthritis	Autoantibodies (anti-CCP, RF) in blood nih nih	Anti-CCP timing study ACPA review
4.7 (median 0.75) nature	Rare diseases (overall)	First symptoms	EURORDIS 2024
~3.3 (up to 9.4) nih	Lupus (SLE)	Autoantibodies in stored blood samples	Arbuckle 2003
2–7 (preclinical) acpjournals + 2	Breast cancer	Tumor detectable on mammogram	Ryser 2022 Weedon-Fekjær 2005
~3.5 (weeks to 18) mdedge	Type 1 diabetes (children)	Multiple islet autoantibodies	TEDDY/JAMA 2013 DIPP 2012
≥5 (prodrome)	Multiple sclerosis	Rising health-care use before first demyelinating event google	Wijnands 2017
~1–3 (diagnosis mean ~5 years old)	Autism	First signs noticed by parents (~1–2 years old) sagepub nih	van 't Hof 2021 First-concern study
Years–decades (not well quantified)	Lung cancer	Smoking-signature mutations in tumors of long-term ex-smokers nejm	TRACERx 2017

Notes and caveats

- **Two different clocks.** Rows that start at a mutation, plaque, amyloid or autoantibody measure *biological onset*. These figures are modeled or inferred, and individual people vary widely. Rows that start at "first symptoms" measure *diagnostic delay*. That delay is avoidable, and it depends on the health system and the country. For endometriosis, average delays range from 1.5 years in Australia to about 11 years in the US. tandfonline
- **Inferred rows.** The heart-attack (~30–50 years) and osteoporosis (~20–40 years) figures are my own inference, not published estimates. They combine lesion or bone-loss onset ages from the sources with typical event ages. Osteoporosis is "silent" until a bone breaks. The International Osteoporosis Foundation reported in 2024 that "even after sustaining a fragility fracture, some 80% of patients with osteoporosis are not identified and treated." An acute bone fracture from trauma is diagnosed within hours or days.

- **Type 2 diabetes.** Harris 1992 extrapolated retinopathy back to an onset about 4–7 years before diagnosis. It then added about 5 years for retinopathy to appear, giving roughly 9–12 years. nih A 2014 re-analysis by Porta et al. argued the real gap is shorter. researchgate
- **Lead time is not the same as onset.** Screening lead times (prostate 5–12 years; breast sojourn time of about 2 years in women in their 40s and 4–7 years in older women) measure how much earlier a test can find a cancer. ejcancer + 2 They include tumors that would never have caused harm. For a single PSA test at age 55, an estimated 27% of detected cancers were overdetected. rand
- **Autism.** The global mean age at diagnosis is about 60 months (about 43 months in studies limited to children aged 10 or under). The range runs up to about 20 years, reflecting people diagnosed in their teens or as adults. ed Girls and adults are diagnosed later on average, but I did not find a pooled figure to put in the table.
- **Not covered.** I did not find solid onset-to-diagnosis figures for melanoma, hypertension, chronic kidney disease, hypothyroidism, sleep apnea, adult ADHD, IBD, hepatitis C, HIV, glaucoma, heart failure or atrial fibrillation. Many of these are still widely underdiagnosed.

Sources:

- PDAY 1993
- PDAY JAMA 1999
- Merck Manual osteoporosis
- NIAMS osteoporosis
- IOF World Osteoporosis Day 2024
- Brenner 2013
- CISNET validation
- DIAN, Alzforum
- DIAN-TU protocol
- Yachida 2010
- HHMI
- WHO cervical cancer
- Gerstung 2020
- Crick summary
- Gaenslen 2011
- Prodromal PD review
- Jones 2014
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- ERSPC lead time
- Norström 2011
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- Scoping review 2024

- Netherlands 2025
- Zhao 2021 meta-analysis
- Dagani 2017
- Lublóy 2020
- Anti-CCP timing study
- ACPA review
- EURORDIS 2024
- Arbuckle 2003
- Ryser 2022
- Weedon-Fekjær 2005
- TEDDY/JAMA 2013
- DIPP 2012
- Wijnands 2017
- van ‘t Hof 2021
- First-concern study
- TRACERx 2017