Rethinking **neurofibromatosis type 1**

About neurofibromatosis type 1 and plexiform neurofibromas

Neurofibromatosis type 1 (NF1) is a rare genetic disorder that arises from mutations in the NF1 gene, which encodes for neurofibromin, a key suppressor of the MAPK pathway.[1,2]

The symptoms of NF1 can manifest in a variety of ways across a variety of organ systems, potentially causing abnormal skin pigmentation, skeletal deformities, tumor growth and neurological complications, such as cognitive impairment.[3]

People with NF1 have a 30%–50% lifetime risk of developing plexiform neurofibromas (PN), which are tumors that grow along the peripheral nerve sheath.[3,4,5] These tumors are typically diagnosed within the first two decades of life and grow more rapidly during childhood.[6,7] PNs can cause severe disfigurement, pain, and functional impairment, and in rare cases can be fatal.[3,4,5]

Quick facts: **NF1-PN**

NF1 is the most common form of neurofibromatosis, with an estimated global birth incidence of approximately 1 in 2,500 individuals.[4,8]

NF1 affects approximately 3 in 10,000 people in the EU, or an estimated **135,000 people**.[9]

Approximately half of NF1 sufferers are the **first in their family be diagnosed** with the condition.[8]

PNs are most often diagnosed in the **first two decades** of life.[4]

Surgical removal of PNs is often difficult due to their infiltrative growth pattern, which can lead to permanent nerve damage and disfigurement.[3]

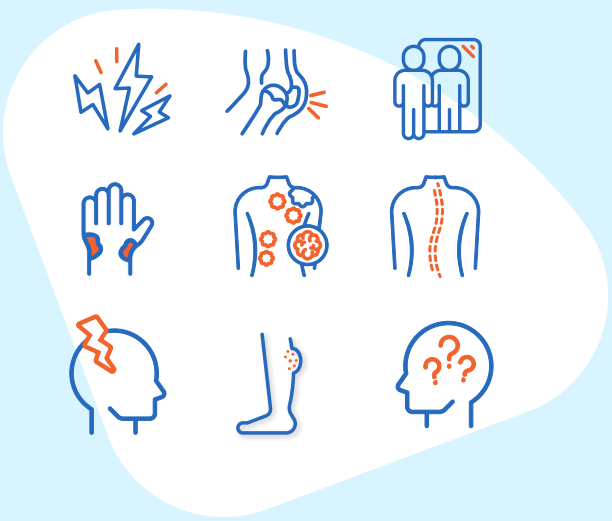
Patients with NF1 had an **8 to 15-year mean reduction in their life expectancy** compared to the general population.[10]

Depending on the location of PNs, some people may experience a variety of symptoms including issues with **breathing, vision or hearing**.[11]

Patients with NF1 have an 8% to 15% lifetime risk of transformation to **malignant tumors**.[7, 12]

According to guidelines, people with NF1 and PN should be evaluated and managed by a **multidisciplinary team, with treatment options specific to the individual**.[13]

NF1-PN symptoms can include[3,5,14]



- Pain
- Difficulty moving around
- Changes in appearance
- Abnormal skin pigmentation
- Neurofibromas (benign tumors)
- Skeletal deformities
- Migraine headaches
- Tumor growth
- Neurological complications such as cognitive impairment

Treatment **of NF1-PN**

- NF1-PN's have historically been limited primarily to **surgical intervention**, which often poses significant challenges due to the infiltrative nature of the tumors.[15,8]
- Where surgery was available, up to **85%** of plexiform neurofibromas could not be completely removed.[3,5,11]
- Nearly **1 in 4** plexiform neurofibromas regrew post-surgery.[7]

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