

**The histology of brain tumours for 67,331 children and 671,085 adults diagnosed in 60 countries during 2000-2014: a global, population-based study (CONCORD-3)**

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## **Abstract**

### **Introduction**

Global variations in survival for brain tumours are very wide when all histological types are considered together. Appraisal of international differences should be informed by the distribution of histology, but little is known beyond Europe and North America.

### **Patients and methods**

The source for the analysis was the CONCORD data base, a programme of global surveillance of cancer survival trends, which includes the tumour records of individual patients from more than 300 population-based cancer registries. We considered all patients aged 0-99 years who were diagnosed with a primary brain tumour during 2000-2014, whether malignant or non-malignant. We presented the histology distribution of these tumours, for patients diagnosed during 2000-2004, 2005-2009, and 2010-2014.

### **Results**

Records were submitted from 60 countries on five continents, 67,331 for children and 671,085 for adults. After exclusion of irrelevant morphology codes, the final study population comprised 60,783 children and 602,112 adults. Only 59 of 60 countries covered in CONCORD-3 were included, because none of the Mexican records were eligible. We defined 12 histology groups for children, and 11 histology groups for adults. In children (0-14 years), the proportion of low-grade astrocytomas ranged between 6% and 50%.

Medulloblastoma was the most common sub-type in countries where low-grade astrocytoma was less commonly reported. In adults (15-99 years), the proportion of glioblastomas varied between 9% and 69%. International comparisons were made difficult by wide differences in the proportion of tumours with unspecified histology, which accounted for up to 52% of diagnoses in children and up to 65% in adults.

### **Conclusions**

To our knowledge, this is the first account of the global histology distribution of brain tumours, in children and adults. Our findings provide insights into the practices and the quality of cancer registration worldwide.

### **Keywords**

Primary brain tumour; histology; International Classification of Diseases; health care disparities; population-based cancer registries; epidemiological study

### **Key points**

A study on the histology distribution of brain tumours spanning 59 countries in five continents.

Wide international variation suggesting disparities in registration practices and data quality.

Robust evidence for actions aimed to improve data quality and to harmonise data collection worldwide.

### **Importance of the study**

To our knowledge, this is the first study of the histology distribution of brain tumours worldwide. We analysed individual records for nearly 700,000 patients diagnosed with a primary brain tumour in 59 countries, during 2000-2014. Many countries were included for the first time in international comparisons. Data were collected using the same protocol to ensure robustly comparable information. We considered children and adults separately, using distinct histology groupings.

The global variation in the histology distribution was remarkable. We provided evidence that such variation may be mainly due to international differences in cancer registration practices, but also to wide disparities in the quality of data.

This study population will be used for further global comparisons of brain tumour survival by histology. Our study should prompt cancer registries to improve data quality and to cooperate internationally for the harmonisation of data collection.

## Introduction

Central Nervous System (CNS) tumours encompass more than fifty histological sub-types, with distinct genetic hallmarks, clinical behaviour and survival.<sup>1</sup>

CNS tumours represent an important cause of cancer-related death in children, adolescents and young adults.<sup>2, 3</sup> Given that most of the patients live in low-income and middle-income countries, the social burden of brain tumours is disproportionately great in countries that are generally least well equipped to deal with that burden.<sup>2, 4, 5</sup>

In order to make a robust international comparison of the frequency of the various histological types of brain tumour, it is first necessary to define suitable histology groupings. The standard framework for presenting data on tumours in children is the International Classification of Childhood Cancer (third edition: ICCC-3<sup>6</sup>), based on the International Classification of Diseases for Oncology (3<sup>rd</sup> edition, ICD-O-3). A separate framework for adolescents and young adults was devised by Birch and Barr.<sup>7</sup> Further schemes for grouping brain tumours by their histology include those used in Cancer Incidence in Five Continents (CI5), the Central Brain Tumour Registry of the United States (CBTRUS), and the Information Network on Rare Cancers (RARECARENet).<sup>8-10</sup> Such strategies are not specific to children or adults, however, and the level of granularity varies. The distribution of brain tumours by histology has only been described as part of analyses of incidence or survival by histology in a given country, region or territory,<sup>11</sup> but differences in study design do not allow valid comparisons. Large international population-based studies, such as the Automated Childhood Cancer Information System (ACCIS) and the European Cancer Registry-based study on survival and care of cancer patients (EUROCARE), used standardised data collection, but they only include European countries.<sup>12-14</sup> African, Central and South American, and Asian countries are substantially under-represented in brain tumour studies by histology.<sup>11</sup>

The CONCORD programme established global surveillance of trends in cancer survival in 2015.<sup>15</sup> The third cycle, in 2018 (CONCORD-3), included individual data for more than 37 million patients

from 71 countries, diagnosed with one of 18 common tumours during 2000-2014. CONCORD-3 highlighted the wide global disparities in survival from all brain tumours combined.

Knowledge of the histology distribution in cohorts of cancer patients used for population-based survival analyses is key to interpreting the worldwide disparities in survival for all brain tumour sub-types combined. Limited access to care is likely to be the main reason for the global inequalities in survival, but international differences could also arise by confounding, if the distribution of histological sub-types varies worldwide and there are international differences in survival between the histological sub-types. For health care systems aiming to track cancer outcomes, clinically relevant survival data by histology are crucial. Only estimates that are based on accurate registration of brain tumours can safely be used by public health officials for cancer control planning at national and international level. Robust survival estimates may also be used by clinicians and epidemiologists to monitor adherence to clinical guidelines.

Using the CONCORD-3 database, we aimed to assess international differences in reporting of the histology of brain tumours and the main indicators of data quality in cancer registration, in children and adults. This study aims to help appraise the validity of future global comparisons of survival from brain tumours using CONCORD-3 data.

## **Patients and methods**

Records were obtained from data supplied by 286 of the 322 population-based cancer registries participating in CONCORD-3. Data were collected using the same protocol, and centrally validated for protocol adherence and consistency through a rigorous 3-phase data quality control procedure (details published elsewhere).<sup>15, 16</sup> In brief, registrations based on a death certificate or autopsy, age out of range and those with invalid date sequences were excluded. Possible errors included implausible combinations of age, sex, site and morphology. Each registry was invited to confirm or correct records with possible errors.



The study population comprised children (0-14 years) and adults (15-99 years), diagnosed during 2000-2014 with a tumour originating in the brain (ICD-O-3 topography code C71), and for whom a morphology code was available. We included both primary, malignant tumours (ICD-O-3 behaviour code 3) and non-malignant tumours, whether benign or of uncertain behaviour (code 0 or 1, respectively).

We used ICD-O-3 to select the morphology codes and the World Health Organisation (WHO) Classification of Central Nervous System Tumours (4<sup>th</sup> edition) for the definition of pathology.<sup>1, 17</sup> Morphology codes in ICD-O-3 such as 9400/3 with the attribute “not otherwise specified” (NOS) can be used in cancer registration. Rule G of ICD-O-3 allows the use of a 6<sup>th</sup> digit in the morphology code to define the histological grading, or degree of differentiation.<sup>17</sup> We used this rule to re-classify tumours coded to “astrocytoma NOS” (ICD-O-3 code 9400/3) to one of the more specific astrocytic sub-types. We did not recode “astrocytoma NOS” with an undetermined grade (grade 9); these were analysed separately. The 6<sup>th</sup> digit of the morphology code is assigned by the pathologist or the registrar while the WHO grade is part of the tumour subtype definition.

The London School of Hygiene and Tropical Medicine’s Ethics Committee approved the project.

## Results

CONCORD-3 included 67,331 children and 671,085 adults diagnosed with a primary brain tumour in 60 countries during 2000-2014 (**Supplementary Table 1**).

We defined distinct histology groupings for children and adults. For children, we mainly followed ICC-3,<sup>6</sup> but we made three changes: (1) we introduced a third, more granular tier for astrocytic tumours; or (2) three of the four ICC-3 subgroups of embryonal tumours (atypical teratoid/rhabdoid tumour, medulloepithelioma, and primitive neuroectodermal tumour) were grouped together, and (3) oligoastrocytoma was included in the “oligodendroglial tumour” histology group. For adults, there are no bespoke classification systems, so we based our definitions on

advice from expert pathologists. The 12 histology groupings adopted for children, and the 11 groupings adopted for adults are set out in **Supplementary Tables 3** and **4**, respectively.

We excluded from analysis 6,548 children (9.7% of eligible tumour records) and 68,973 adults (10.3%) because the morphology code was (1) not consistent with the WHO classification; (2) consistent with the WHO classification but relevant only for the meninges or the pituitary gland), or (3) missing (**Supplementary Tables 5** and **6**).

The final study population comprised 60,783 children (90.3% of eligible submissions) and 602,112 adults (89.7%). The study covered only 59 of the 60 countries included in CONCORD-3: Mexico was excluded because none of the records had a valid morphology code. **Supplementary Table 1** and **Supplementary Table 2** present detailed trends for 2000-2004, 2005-2009, and 2010-2014, by country and histology group.

We focus our comments mainly on the histology distribution for 2005-2009, when proportions were more robust than for 2000-2004 and 2010-2014 because more registries contributed data for the central period. The comments are broadly applicable to earlier and later periods.

#### *Children (0-14 years) – 2005-2009*

The proportion of brain tumours classified as low-grade astrocytoma (WHO grade I or II) varied from less than 10% to more than 30%. The proportion was below 10% in African countries, in Brazil, Costa Rica, Ecuador, China, Korea, Thailand, the Russian Federation and New Zealand; in the range 10-19% in Argentina, Colombia, Japan, Jordan, Taiwan, Poland and Australia, and in the range 20-29% in Chile, Canada, Israel, Singapore, Turkey, Croatia, Denmark, France, Germany, Italy, Norway, Portugal, Spain and Sweden. These tumours accounted for more than 30% of brain tumours in Puerto Rico, the United States, Belarus, Czech Republic, Finland, Ireland, the Netherlands, Slovakia, Switzerland and the United Kingdom (**Supplementary Table 1, Figure 1**).

High-grade astrocytomas (WHO grade III or IV) comprised less than 10% of all brain tumours in Argentina, Colombia, Costa Rica, Puerto Rico, Canada, the United States, China, Israel, Japan, Korea, Singapore, Turkey, and in 17 of 28 participating European countries. The proportion was in the range 10-20% in African countries, and in Brazil, Ecuador, Jordan, Taiwan, Thailand, Germany, Poland, the Russian Federation, Australia and New Zealand (**Supplementary Table 1, Figure 1**).

Unspecified astrocytomas (ICD-O-3 code 9400/39) accounted for less than 10% of brain tumours in 30 of 59 countries, but the proportion was in the range 10-19% in African countries, and in Argentina, Colombia, Thailand, Croatia, Finland, Poland, the Russian Federation and Sweden. The highest levels were seen in Ecuador (20%) and the Russian Federation (27%). Unspecified astrocytoma was ungraded (6<sup>th</sup> digit of the ICD-O-3 morphology code) in less than 50% of the cases in Puerto Rico, Israel, Belarus, Belgium, Germany, the Netherlands, Slovakia and New Zealand; in 50-99% of the cases in African countries, Ecuador, Canada, the United States, China, Japan, Jordan, Taiwan, Turkey, Czech Republic, Italy, Norway, Poland, Portugal, the Russian Federation, Spain, Switzerland, the United Kingdom and Australia; 100% ungraded elsewhere. Most cases with known grade were assigned grade 1 or 2 in the United States, Israel, Taiwan, Turkey, France, Germany, the Netherlands, the United Kingdom and Australia. In Jordan, however, there were slightly more tumours with grade 3-4 than 1-2 (**Supplementary Table 1, Supplementary Table 7, Figure 1**).

Medulloblastomas represented less than 10% of brain tumours in African countries, and in China and Ireland. The proportion was in the range 10-19% in 21 of 59 countries; and in the range 20-29% in Argentina, Brazil, Korea, Thailand, Poland and New Zealand; the proportion was 30% in Ecuador, 31% in Jordan in Taiwan (**Supplementary Table 1, Figure 1**).

Unspecified tumours represented less than 10% of brain tumours in most countries. The proportion was in the range 10-20% in Argentina, Brazil, Ecuador, Japan, Korea, Thailand, Belarus, Italy and New Zealand. The proportion was 41% in African countries, 33% in Costa Rica, 52% in China and 31% in Denmark (**Supplementary Table 1, Figure 1**).

*Adults (15-99 years) – 2005-2009*

Diffuse and anaplastic astrocytomas accounted for less than 10% of brain tumours in 26 of 59 countries. The proportion was in the range 10-19% in Argentina, Brazil, Chile, Ecuador, Puerto Rico, the United States, Cyprus, Israel, Jordan, Qatar, Singapore, Taiwan, Austria, Belgium, Czech Republic, Germany, Latvia, Malta, the Netherlands, Poland, Romania, the Russian Federation, Slovakia, Slovenia, Spain, Switzerland and New Zealand; the proportion was 21% in Estonia (**Supplementary Table 2, Figure 2**).

The proportion of brain tumours classified as glioblastoma varied from less than 10% to more than 50%. The proportion was below 10% only in China; in the range 10-29% in Algeria, Nigeria, Costa Rica, Ecuador, India, Malaysia, Thailand, Malta, and the Russian Federation; in the range 30-49% in Argentina, Brazil, Chile, Colombia, Japan, Korea, Qatar, Singapore, Taiwan, Turkey, Denmark, Iceland, Italy, Latvia, Romania, Slovakia, and Spain; in the range 50-70% in Martinique, Puerto Rico, North America, Cyprus, Israel, Jordan, Kuwait, in 21 of 28 participating European countries and in Oceania (**Supplementary Table 2, Figure 2**).

Unspecified astrocytoma encompassed less than 10% of brain tumours in 43 of 59 countries. The proportion was in the range 10-19% in Algeria, Argentina, Brazil, Colombia, Finland and Lithuania, and in the range 20-29% in Costa Rica, Malaysia, Thailand and the Russian Federation. The highest level was seen in Ecuador (34%). Unspecified astrocytoma was ungraded (6<sup>th</sup> digit of the ICD-O-3 morphology code) in less than 50% of the cases in Puerto Rico, the United States, Cyprus, Israel, Jordan, Qatar, Singapore, Turkey, Belgium, Czech Republic, the Netherlands, Slovakia, Slovenia, Spain, Switzerland, the United Kingdom and New Zealand; in 50-99% of the cases in 23 countries; and 100% ungraded in Nigeria, Brazil, Costa Rica, Martinique, Korea, Malaysia, Croatia, Denmark, Estonia, Finland, France, Iceland, Ireland, Latvia and Sweden. Most cases with known grade were assigned grade 1 in Norway and the Russian Federation, grade 2 or 3 in 30 countries, and grade 4 in Canada (**Supplementary Table 2, Supplementary Table 8, Figure 2**).

Brain tumours of unspecified histology accounted for less than 10% of brain tumours in 28 countries. The proportion was in the range 10-19% in Brazil, Costa Rica, Ecuador, Canada, Turkey, the Netherlands, Romania, the Russian Federation, Sweden and the United Kingdom; in the range 30-50% in Nigeria, Chile, Colombia, India, Thailand, Denmark, Italy and Latvia. The highest levels were seen in Algeria (65%) and China (65%) (**Supplementary Table 2, Figure 2**).

#### *Basis of diagnosis – 2000-2014*

In children, the vast majority of low-grade astrocytomas were histologically verified. The proportion was in the range 90-94% in Canada and Australia; in the range 95-99% in the United States, Israel, Japan, Singapore, Turkey, Belgium, Croatia, France, Germany, Italy, the Netherlands, Spain and the United Kingdom; and 100% in the remaining 38 countries (**Supplementary Table 9**).

For childhood unspecified neoplasms, a diagnostic confirmation was mostly not available in Central and South America, North America, Asia, Europe and Oceania (10-25%), while diagnoses were largely confirmed in Africa (74%) (**Supplementary Table 9**).

In adults, glioblastomas were mostly histologically verified. The proportion was 79% in Malta; in the range 80-89% in Canada, Croatia, Norway, United Kingdom and New Zealand; in the range 90-94% in the United States, Israel, Korea, Kuwait, Austria, Germany, Switzerland and Australia; in the range 95-99% in 26 countries; glioblastomas were reported as 100% histologically verified in the remaining 13 countries (**Supplementary Table 10**).

The proportion of histological verification for unspecified neoplasms, in adults, varied between 4% in Oceania and 65% in Africa (**Supplementary Table 10**).

#### *Time trends*

The proportion of low-grade astrocytomas in children was fairly stable in all continents during the 15 years between 2000 and 2014. The proportion of unspecified neoplasms rose from 2% to 6% in North America.

In adults, the proportion of glioblastomas during 2000-2014 rose only in Europe (from 46% to 56%) and Oceania (from 57% to 65%). Increasing trends for unspecified neoplasms were observed in Central and South America, while the proportions for both sub-types subsided in Europe and Oceania. In North America, the proportion of unspecified neoplasms rose from 6% to 12%.

## **Discussion**

To our knowledge, this is the first global study of the distribution of brain tumour histology. It spans 60 countries in five continents and includes countries, regions or territories not previously represented in international comparisons. We analysed individual patient records from 286 population-based cancer registries. Data were collected using the same study protocol and checked using the same data quality procedures to ensure high-quality and robustly comparable information.

There is wide international variation in the distribution of brain tumour sub-types around the world. There were striking international differences in the proportion of low-grade astrocytomas in children (ranging from 6% to 50% in 2005-2009). The proportion of childhood medulloblastomas also varied widely between countries, in several of which it offset the low proportion of low-grade astrocytomas. In adults, the largest international variation was for glioblastomas (from 9% to 69%).

We found wide international disparities in some of the quality indicators, such as the proportion of tumours with an unspecified histology, up to 52% in children and 65% in adults, and the proportion of histologically verified tumours.

Non-malignant brain tumours should be recorded by all cancer registries because the location of brain tumours is a determinant of the outcome, as well as histology. We have provided compelling

evidence that remarkable international differences exist in the registration of non-malignant brain tumours. This was mostly seen for low-grade astrocytomas in children, and for childhood neuronal and mixed neuronal-glial tumours, both of which are mainly non-malignant sub-types. For instance, Ecuador started recording non-malignant brain tumours in 2011, while in New South Wales, Australia, only malignant brain tumour sub-types are registered, by law.

ICCC-3 is a well-established standard for conducting studies on childhood tumours, but it does not allow for stratification of astrocytic tumours by WHO grade.<sup>6</sup> Studies on survival from childhood brain tumours published to date have generally adopted ICCC-3, but the interpretation of time trends and international differences is complicated by changes in coding over time and the inconsistent registration of non-malignant tumours between countries or regions.<sup>11</sup> ICD-O underwent a major change in 2000, coinciding with the release of the third edition. Pilocytic astrocytoma was attributed a behaviour code of 3 (malignant) in ICD-O-2 and a behaviour code of 1 (borderline) in ICD-O-3.<sup>17, 18</sup> In the US, where registration of non-malignant tumours has been mandatory since 2004,<sup>19</sup> pilocytic astrocytoma (WHO grade I) alone represented 30% of all childhood gliomas (2007-2011).<sup>20</sup> In countries where non-malignant tumours are inconsistently recorded, pilocytic astrocytoma has become potentially ineligible for cancer registration since 2000. Failing to record pilocytic astrocytoma, the single most common childhood brain tumour, and any other non-malignant tumours could potentially lead to underestimation of both incidence and survival for all childhood astrocytic tumours combined, regardless of behaviour. If these international differences in cancer registration practices are not properly considered, global disparities in survival for all astrocytic tumours may be wrongly interpreted. Survival in countries or regions that only include malignant brain tumours will be systematically lower than in countries where non-malignant tumours are also registered. CONCORD-3 showed wide international disparities in survival from childhood brain tumours. For instance, among children diagnosed during 2005-2009, age-standardised 5-year net survival varied from less than 40% in Brazil, 60% in Australia, and close to 80% in Sweden.<sup>15</sup> Those disparities persisted substantially unchanged among children diagnosed during 2010-2014. In our study, during 2005-2009, the proportion of low-grade astrocytoma in Brazil, Australia, and Sweden were 9%, 17%, and 26%, respectively.

The use of misleading survival estimates may have huge implications when the public is engaged in research, because it may lead to a distorted perception of cancer burden and risk.

The CONCORD-3 protocol required data to be coded according to ICD-O-3, and both malignant and non-malignant brain tumours were eligible. In this study, however, pilocytic astrocytoma was still coded as malignant (ICD-O-3 behaviour code 3) in 7,194 children and 5,344 adults. For instance, the proportion of miscoded childhood pilocytic astrocytoma was 70% in Czech Republic and 100% in Canada, the United States, Israel and Taiwan (data not shown).

Glioblastomas comprised 80% of astrocytic tumours in the 40-99 years age group in North America, Europe and Oceania during 2000-2014, but only 60% or less in Central and South America (data not shown). Glioblastoma incidence was considerably higher in non-Hispanic Whites than in other ethnicities in the United States during 2000-2014, suggesting that risk alleles are more common in populations of predominantly European ancestry.<sup>9, 21</sup> Alternatively, a higher proportion of cases in a given population could reflect an older population, because the incidence of glioblastoma increases with age. In countries where glioblastomas were more frequently reported in 2010-2014 than in 2000-2004 and 2005-2009, we found a concurrent decline in the proportion of unspecified astrocytomas (e.g. Croatia, Poland, Portugal, and the United Kingdom) or the proportion of diffuse and anaplastic astrocytomas (e.g. Belgium, France, the Netherlands, and Korea). These findings may suggest improved quality in cancer registration but also a refinement in the pathology workup of astrocytic tumours enabling identification of clinically aggressive subtypes.

We combined diffuse astrocytoma and anaplastic astrocytoma in adults into a single group. Sub-optimal reproducibility of the pathological diagnosis of glioma has been clearly established, with an estimated 20-30% of gliomas re-classified at independent review.<sup>22, 23</sup> Mutations in the isocitrate dehydrogenase (*IDH*) gene 1 or 2 were recognised to be a genetic hallmark of glioblastoma in 2008.<sup>24</sup> These mutations were later found to characterise 70-80% of WHO grade II and III gliomas.<sup>25</sup> Tumours harbouring an *IDH* mutation have a more favourable outcome.<sup>26, 27</sup> Grade II or III gliomas with the same genetic profile have a similar clinical behaviour, regardless of the pathological grading.<sup>23</sup>



The definition “astrocytoma NOS” was used in previous studies for ill-defined astrocytic tumours which could not be assigned a more precise descriptor (e.g. glioblastoma).<sup>13, 14</sup> “Astrocytoma NOS”, however, is a standalone definition in ICD-O-3, rather than a category for astrocytic tumours that could not be otherwise specified, and it shares the same morphology code with “diffuse astrocytoma” (WHO grade II).<sup>1, 17</sup> In 2005-2009, the proportion of brain tumours that were coded as astrocytoma NOS varied widely between countries, suggesting different practices and interpretations among cancer registries. The quality of cancer registration, however, seemed to improve during 2000-2014, because the use of “astrocytoma NOS” fell substantially in several countries (e.g. from 41% to 23% in Ecuador, or from 29% to 5% in Thailand). We supposed that recording of grade (rule G in ICD-O) was accurate. For a given record, if the grade (6<sup>th</sup> digit of histology) was coded in the range 1-4, the use of the definition “astrocytoma NOS” was assumed to be a random error at coding level; if the grade was not available (coded to 9), we assumed that the tumour could not be defined more precisely. Such a strategy should control for randomly misclassified astrocytic tumours.

We included both histologically confirmed and histologically unconfirmed brain tumours, in line with previous studies.<sup>9, 13, 14</sup> The diagnosis of a brain tumour may pose challenges due to anatomical constraints for safely performing biopsy or surgery, or the poor clinical condition of the patient. These hurdles may be more relevant for adults, who are frequently diagnosed at an advanced age. Brain tumours often show pathognomonic appearances at neuroimaging, potentially making a firm clinical diagnosis plausible.<sup>28, 29</sup> Nevertheless, the differential diagnosis between a solitary metastasis and a high-grade glioma may be challenging in clinical practice if advanced imaging techniques are not available.<sup>30</sup> International coding guidelines currently restrict the use of a specific morphology code in the absence of histological verification to certain clinical situations (e.g. neoplasms located in the brain stem). In all other cases, the morphology code for a tumour of unspecified morphology (i.e. 8000-8005) should be preferred if the diagnosis cannot be histologically proven. However, with the refinement of neuroimaging, these guidelines may need to be updated.<sup>31</sup>

In these data, the proportion of histological verification for specified tumour subtypes was around 100% in children, while in adults it was slightly lower, but still in the range 90-100%. The higher proportion of histological confirmation in children than in adults may point to increased diagnostic intensity in children or to the existence of specialist paediatric cancer registries. Very high proportions of histological confirmation, however, may also suggest over-reliance on pathology records for cancer registration, or under-ascertainment of brain tumours.<sup>32</sup> The selective recording of only histologically verified brain tumours may ultimately bias survival estimates upward, because patients receiving a biopsy or surgery are more likely to present in better clinical condition and because the availability of these procedures may reflect better access to treatment in general.

In this study, the proportion of tumours of unspecified histology (ICD-O-3 codes 8000-8005) was generally low, but some countries had high proportions, particularly in adults. Interestingly, in countries where the proportion of unspecified tumours was 30% or more, the quality of data was consistently poor across all participating sub-national registries (data not shown). In some countries (e.g. Algeria, China), the proportion of tumours of unspecified histology was higher than the proportion of glioblastoma. These findings suggest that barriers to the accurate reporting of a brain tumour may intervene at all stages, including formulation and clinical recording of the diagnosis, data transmission and data extraction for the cancer registry. If the accuracy of neuropathology reports is called into question, it is important to measure the effect on patient outcomes, which may be poorer if treatment is not appropriate for the specific histology.

Furthermore, survival estimates for specific tumour sub-types are likely to be biased if the histology is fully known for only a subset of records, those estimates may not be robustly generalisable to the entire population of a given country or territory. The broad global variation in the proportion of tumours of unspecified histology calls for caution when interpreting the histology distribution itself, but also in interpreting the survival inequalities for individual brain tumour sub-types or for all brain tumours combined. Overall, we found a decline in the proportions of neoplasms of unspecified histology over the 15-year period 2000-2014, but increasing trends were observed in North America for both children and adults, although both the values and the changes were small. Surprisingly, in several countries, most or even 100% of brain tumours with an unspecified

histology were reported as histologically confirmed. One would expect that histologically confirmed tumours could be assigned a specific morphology code. This suggests that the basis of diagnosis may be mis-coded, so its use as an indicator of data quality requires caution. We did not exclude countries where the quality of brain tumour reporting was poor, because putting these countries in the context of a large international comparison is crucial to prompt action to improve cancer registration.

Our study provided insights on the data quality indicators that are relevant to reporting of brain tumours worldwide, namely the proportion of tumours of unspecified histology and the proportion of histological verification by brain tumour sub-type. However, given the scale of the study, we could not explore other important quality measures, for instance whether multiple data sources were used to capture or validate a brain tumour diagnosis. Ascertainment of non-malignant brain tumours is likely to be incomplete in several countries. While this finding may suggest poor access to care, it is more likely to reflect disparities in local health regulations, which we could not take account. Other important indicators of data quality are the proportion of brain tumours registered only from a death certificate or detected at autopsy, or the proportion of patients lost to follow-up in countries using active follow-up, or, alternatively, the proportion of patients censored alive before five years from diagnosis where passive follow-up is in place. These indicators, however, are only relevant to estimation of survival and will be analysed in the future.

In CONCORD-3, we only collected data for tumours of the brain (ICD-O topography code C71). Diagnoses for histological sub-types in other parts of the central nervous system, such as germ-cell tumours of the pineal gland or optic nerve gliomas, were excluded because they were likely to be misclassified or to represent a minority of the true population of patients for that sub-type. For instance, germ cell tumours and optic nerve gliomas accounted for 4% and 6% of all childhood CNS tumours, respectively, in England, during 2001-2010.<sup>33</sup> These tumours are uncommon, but they should ideally be included in future iterations of CONCORD.

In this study, the definition of the histology groupings, and the selection of the relevant ICD-O-3 morphology codes, was based on the WHO Classification of Central Nervous System Tumours 4th edition (2007).<sup>1</sup> In 2016, however, a revision of the WHO classification revolutionised the taxonomy

of CNS tumours by defining tumour entities genetically, and prioritising the molecular profile over the traditional WHO grading system.<sup>34</sup> ICD-O-3 was updated accordingly. From 2018, the Central Brain Tumor Registry of the United States (CBTRUS) started collecting population-based data from 48 state-wide cancer registries using the 2016 WHO categories.<sup>9</sup> It may take a long time for other cancer registries world-wide to follow suit and for data to be used in survival analyses. However, in some countries, molecular assays may simply be unavailable. Notwithstanding these obstacles, international and continental associations of cancer registries should promote transition to the new neuropathology lexicon for data collection, paving the way for modern, informative international comparisons in brain tumour survival by histology.

In conclusion, this study population will be used for further global comparisons of brain tumour survival by histology. International disparities in survival can only be interpreted if a detailed analysis of the histology distribution in each cancer population is available. The quality of data is sub-optimal in several countries. Data from countries with low proportions of ill-defined tumours (i.e. of unspecified histology or labelled as NOS) and in which the histology distribution is fairly reproducible over time, may be used to improve the comparability of survival estimates for all brain tumours combined. Standardisation by histology, using proportionally weights based on a reliable histology distribution, is one possible approach.

In practice, hurdles to the collection of robust histology data can only be overcome if international associations of cancer registries ([IACR](#)) and pathologists ([IAP](#)) can cooperate to promote harmonisation of data collection. The Global Initiative for Cancer Registry Development ([GICR](#)),<sup>35</sup> led by the International Agency for Research on Cancer and the Union for International Cancer Control (UICC), aims to help countries improve the quality of their population-based cancer data by training registry staff and strengthening local health information systems. Other strategies, relevant to both long-standing and more recent cancer registries, include audits at local and national level on the quality of pathological diagnosis, as well as the quality and completeness of cancer registration. Ultimately, these initiatives would enable clinicians, policy-makers and other stakeholders to use population-based data on the incidence and survival from brain tumours for public health purposes with greater confidence.

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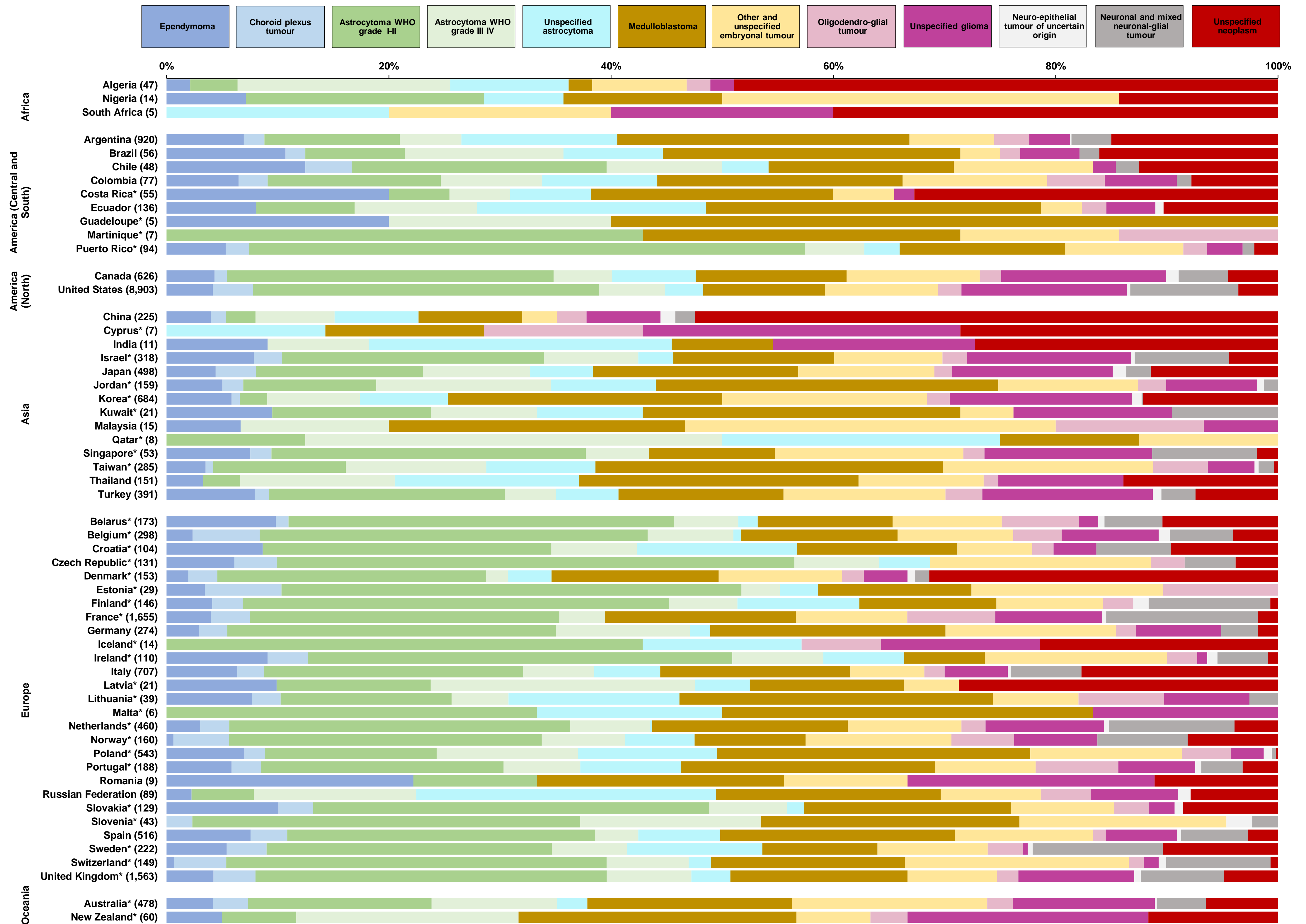
## **Figure captions**



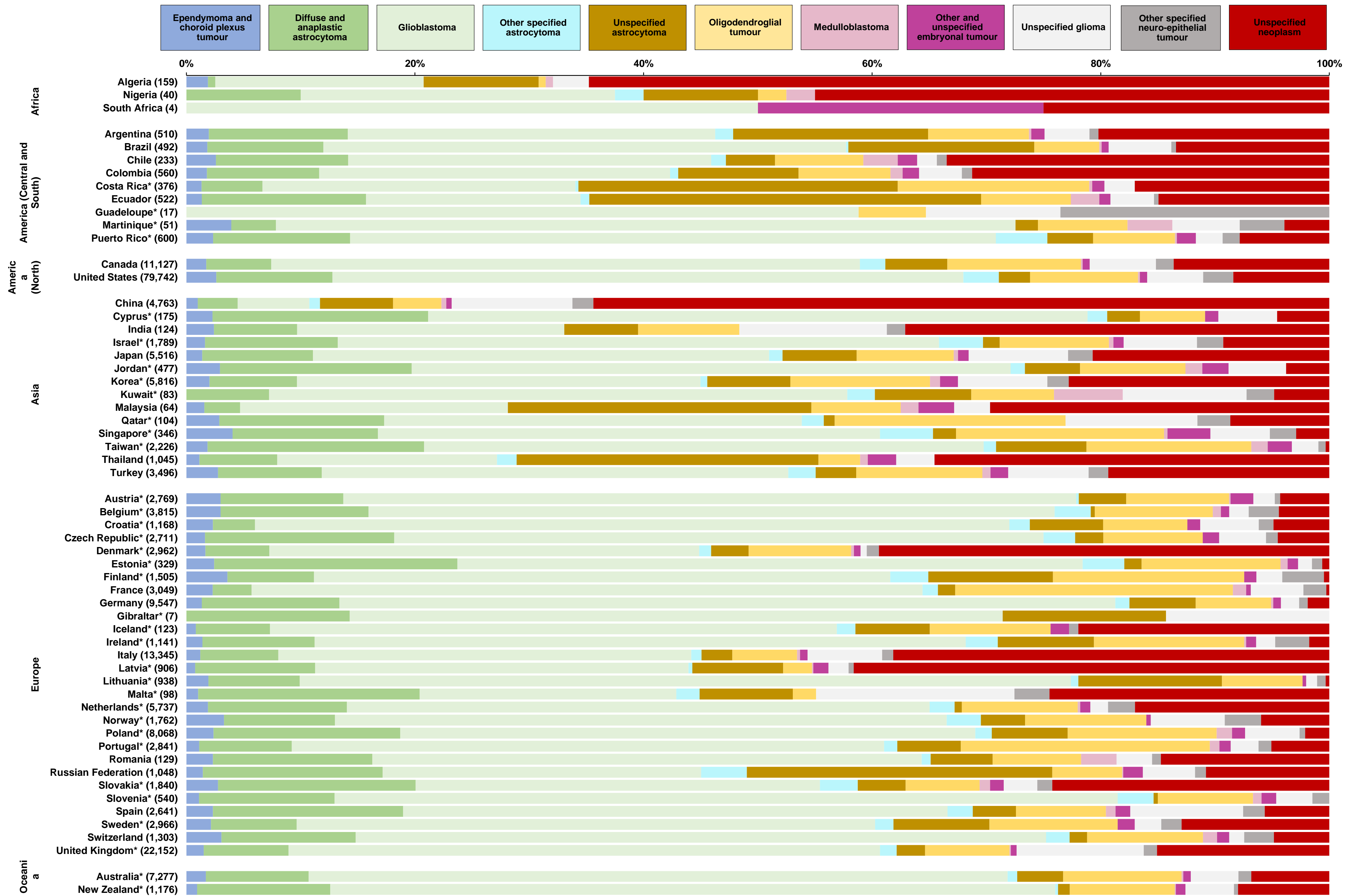
Figure 1. Histology distribution (%) by country, children (0-14 years), 2005-2009.

Figure 2. Histology distribution (%) by country, adults (15-99 years), 2005-2009.

**Figure 1. Histology distribution (%) by country, children (0-14 years), 2005-2009.**  
 Numbers in brackets are counts (all brain tumours combined). \* Data with 100% coverage of the national population.



**Figure 2. Histology distribution (%) by country, adults (15-99 years), 2005-2009.**  
 Numbers in brackets are counts (all brain tumours combined). \* Data with 100% coverage of the national population.



Supplementary Table 1. Histology distribution, by continent, country, and calendar period. Children (0-14 years).

Country	Period of diagnosis	All tumour types combined		Ependy-moma		Choroid plexus tumour		Astrocytoma WHO grade I and II		Astrocytoma WHO grade III and IV		Unspecified astrocytoma		Medullo-blastoma		Other and unspecified embryonal tumour		Oligodendro-glioma		Unspecified glioma		Neuro-epithelial glial tumour of uncertain origin		Neuronal and mixed neuronal-glioma tumour		Unspecified neoplasm	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<b>Africa</b>	2000-2004	26	-	-	-	-	2	7.7	8	30.8	1	3.8	1	3.8	5	19.2	-	-	4	15.4	-	-	-	-	5	19.2	
	2005-2009	66	2	3.0	-	-	5	7.6	9	13.6	7	10.6	3	4.5	10	15.2	1	1.5	2	3.0	-	-	-	-	27	40.9	
	2010-2014	69	4	5.8	-	-	6	8.7	2	2.9	6	8.7	12	17.4	21	30.4	1	1.4	2	2.9	-	-	-	-	15	21.7	
<b>Algeria</b>	2000-2004	16	-	-	-	-	1	6.3	6	37.5	-	-	-	-	2	12.5	-	-	4	25.0	-	-	-	-	3	18.8	
	2005-2009	47	1	2.1	-	-	2	4.3	9	19.1	5	10.6	1	2.1	4	8.5	1	2.1	1	2.1	-	-	-	-	23	48.9	
	2010-2014	34	1	2.9	-	-	1	2.9	2	5.9	4	11.8	3	8.8	11	32.4	1	2.9	1	2.9	-	-	-	-	10	29.4	
<b>Mauritius*</b>	2010-2014	3	-	-	-	-	-	-	-	-	2	66.7	1	33.3	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Nigeria</b>	2005-2009	14	1	7.1	-	-	3	21.4	-	-	1	7.1	2	14.3	5	35.7	-	-	-	-	-	-	-	-	2	14.3	
	2010-2014	26	2	7.7	-	-	5	19.2	-	-	-	-	7	26.9	8	30.8	-	-	1	3.8	-	-	-	-	3	11.5	
<b>South Africa</b>	2000-2004	10	-	-	-	-	1	10.0	2	20.0	1	10.0	1	10.0	3	30.0	-	-	-	-	-	-	-	-	2	20.0	
	2005-2009	5	-	-	-	-	-	-	-	-	1	20.0	-	-	1	20.0	-	-	1	20.0	-	-	-	-	2	40.0	
	2010-2014	6	1	16.7	-	-	-	-	-	-	-	-	1	16.7	2	33.3	-	-	-	-	-	-	-	-	2	33.3	
<b>America (Central and South)</b>	2000-2004	1,217	90	7.4	34	2.8	155	12.7	91	7.5	128	10.5	303	24.9	112	9.2	32	2.6	42	3.5	1	0.1	26	2.1	203	16.7	
	2005-2009	1,398	109	7.8	24	1.7	205	14.7	95	6.8	179	12.8	354	25.3	107	7.7	40	2.9	53	3.8	2	0.1	37	2.6	193	13.8	
	2010-2014	1,204	105	8.7	33	2.7	163	13.5	76	6.3	175	14.5	264	21.9	98	8.1	29	2.4	55	4.6	6	0.5	25	2.1	175	14.5	
<b>Argentina</b>	2000-2004	900	63	7.0	31	3.4	85	9.4	58	6.4	87	9.7	237	26.3	84	9.3	25	2.8	29	3.2	-	-	25	2.8	176	19.6	
	2005-2009	920	64	7.0	17	1.8	112	12.2	51	5.5	129	14.0	242	26.3	70	7.6	29	3.2	34	3.7	1	0.1	33	3.6	138	15.0	
	2010-2014	791	71	9.0	25	3.2	102	12.9	42	5.3	128	16.2	172	21.7	60	7.6	20	2.5	39	4.9	4	0.5	18	2.3	110	13.9	
<b>Brazil</b>	2000-2004	79	3	3.8	3	3.8	13	16.5	9	11.4	15	19.0	21	26.6	4	5.1	-	-	7	8.9	-	-	-	-	4	5.1	
	2005-2009	56	6	10.7	1	1.8	5	8.9	8	14.3	5	8.9	15	26.8	2	3.6	1	1.8	3	5.4	-	-	1	1.8	9	16.1	
	2010-2014	48	7	14.6	2	4.2	2	4.2	4	8.3	2	4.2	15	31.3	5	10.4	1	2.1	3	6.3	-	-	-	-	7	14.6	
<b>Chile</b>	2000-2004	13	5	38.5	-	-	-	-	1	7.7	1	7.7	3	23.1	-	-	-	-	-	-	-	-	-	-	3	23.1	
	2005-2009	48	6	12.5	2	4.2	11	22.9	5	10.4	2	4.2	8	16.7	6	12.5	-	-	1	2.1	-	-	1	2.1	6	12.5	
	2010-2014	14	-	-	-	-	3	21.4	2	14.3	-	-	3	21.4	1	7.1	1	7.1	2	14.3	-	-	-	-	2	14.3	
<b>Colombia</b>	2000-2004	72	5	6.9	-	-	12	16.7	11	15.3	13	18.1	10	13.9	4	5.6	4	5.6	1	1.4	-	-	1	1.4	11	15.3	
	2005-2009	77	5	6.5	2	2.6	12	15.6	7	9.1	8	10.4	17	22.1	10	13.0	4	5.2	5	6.5	-	-	1	1.3	6	7.8	
	2010-2014	88	4	4.5	-	-	16	18.2	13	14.8	10	11.4	11	12.5	13	14.8	2	2.3	5	5.7	1	1.1	1	1.1	12	13.6	
<b>Costa Rica*</b>	2000-2004	15	1	6.7	-	-	3	20.0	-	-	1	6.7	4	26.7	2	13.3	1	6.7	-	-	-	-	-	-	3	20.0	
	2005-2009	55	11	20.0	-	-	3	5.5	3	5.5	4	7.3	12	21.8	3	5.5	-	-	1	1.8	-	-	-	-	18	32.7	
	2010-2014	80	11	13.8	1	1.3	10	12.5	5	6.3	9	11.3	19	23.8	8	10.0	1	1.3	1	1.3	-	-	-	-	15	18.8	
<b>Ecuador</b>	2000-2004	42	5	11.9	-	-	2	4.8	4	9.5	10	23.8	13	31.0	3	7.1	1	2.4	3	7.1	1	2.4	-	-	-	-	
	2005-2009	136	11	8.1	-	-	12	8.8	15	11.0	28	20.6	41	30.1	5	3.7	3	2.2	6	4.4	1	0.7	-	-	14	10.3	
	2010-2014	139	11	7.9	-	-	18	12.9	9	6.5	24	17.3	35	25.2	8	5.8	3	2.2	4	2.9	-	-	-	-	27	19.4	
<b>Guadeloupe</b>	2005-2009	5	1	20.0	-	-	-	-	1	20.0	-	-	3	60.0	-	-	-	-	-	-	-	-	-	-	-	-	
	2010-2014	8	-	-	-	-	1	12.5	-	-	1	12.5	1	12.5	2	25.0	-	-	-	-	-	-	3	37.5	-	-	
<b>Martinique*</b>	2000-2004	6	1	16.7	-	-	2	33.3	-	-	-	-	3	50.0	-	-	-	-	-	-	-	-	-	-	-	-	
	2005-2009	7	-	-	-	-	3	42.9	-	-	-	-	2	28.6	1	14.3	1	14.3	-	-	-	-	-	-	-	-	
	2010-2014	4	1	25.0	-	-	1	25.0	-	-	-	-	1	25.0	-	-	-	-	-	-	-	-	1	25.0	-	-	
<b>Puerto Rico*</b>	2000-2004	90	7	7.8	-	-	38	42.2	8	8.9	1	1.1	12	13.3	15	16.7	1	1.1	2	2.2	-	-	-	-	6	6.7	
	2005-2009	94	5	5.3	2	2.1	47	50.0	5	5.3	3	3.2	14	14.9	10	10.6	2	2.1	3	3.2	-	-	1	1.1	2	2.1	
	2010-2014	32	-	-	5	15.6	10	31.3	1	3.1	1	3.1	7	21.9	1	3.1	1	3.1	1	3.1	1	3.1	2	6.3	2	6.3	

Country	Period of diagnosis	All tumour types combined			Ependy- moma		Choroid plexus tumour		Astrocytoma WHO grade I and II		Astrocytoma WHO grade III and IV		Unspecified astrocytoma		Medullo- blastoma		Other and unspecified embryonal tumour		Oligodendro- glial tumour		Unspecified glioma		Neuro- epithelial glial tumour of uncertain origin		Neuronal and mixed neuronal- glial tumour		Unspecified neoplasm	
		No.	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
America (North)	2000-2004	8,206	480	5.8	110	1.3	2,902	35.4	581	7.1	341	4.2	1,041	12.7	915	11.2	269	3.3	1,185	14.4	33	0.4	210	2.6	139	1.7		
	2005-2009	9,529	398	4.2	328	3.4	2,954	31.0	565	5.9	351	3.7	1,061	11.1	980	10.3	201	2.1	1,417	14.9	35	0.4	893	9.4	346	3.6		
	2010-2014	7,925	297	3.7	258	3.3	2,377	30.0	551	7.0	327	4.1	787	9.9	797	10.1	124	1.6	1,155	14.6	30	0.4	782	9.9	440	5.6		
Canada	2000-2004	596	32	5.4	7	1.2	183	30.7	32	5.4	37	6.2	92	15.4	83	13.9	21	3.5	63	10.6	1	0.2	18	3.0	27	4.5		
	2005-2009	626	27	4.3	7	1.1	184	29.4	33	5.3	47	7.5	85	13.6	75	12.0	12	1.9	93	14.9	7	1.1	28	4.5	28	4.5		
	2010-2014	810	31	3.8	23	2.8	183	22.6	43	5.3	31	3.8	92	11.4	82	10.1	6	0.7	96	11.9	3	0.4	73	9.0	147	18.1		
United States	2000-2004	7,610	448	5.9	103	1.4	2,719	35.7	549	7.2	304	4.0	949	12.5	832	10.9	248	3.3	1,122	14.7	32	0.4	192	2.5	112	1.5		
	2005-2009	8,903	371	4.2	321	3.6	2,770	31.1	532	6.0	304	3.4	976	11.0	905	10.2	189	2.1	1,324	14.9	28	0.3	865	9.7	318	3.6		
	2010-2014	7,115	266	3.7	235	3.3	2,194	30.8	508	7.1	296	4.2	695	9.8	715	10.0	118	1.7	1,059	14.9	27	0.4	709	10.0	293	4.1		
Asia	2000-2004	2,077	130	6.3	27	1.3	251	12.1	225	10.8	186	9.0	467	22.5	220	10.6	70	3.4	172	8.3	14	0.7	26	1.3	289	13.9		
	2005-2009	2,826	158	5.6	45	1.6	333	11.8	259	9.2	207	7.3	581	20.6	389	13.8	72	2.5	364	12.9	21	0.7	68	2.4	329	11.6		
	2010-2014	2,500	112	4.5	50	2.0	334	13.4	248	9.9	124	5.0	506	20.2	369	14.8	45	1.8	371	14.8	15	0.6	60	2.4	266	10.6		
China	2000-2004	84	3	3.6	-	-	9	10.7	1	1.2	6	7.1	9	10.7	-	-	2	2.4	5	6.0	1	1.2	-	-	48	57.1		
	2005-2009	225	9	4.0	3	1.3	6	2.7	16	7.1	17	7.6	21	9.3	7	3.1	6	2.7	15	6.7	3	1.3	4	1.8	118	52.4		
	2010-2014	181	3	1.7	4	2.2	11	6.1	6	3.3	9	5.0	28	15.5	15	8.3	1	0.6	13	7.2	4	2.2	4	2.2	83	45.9		
Cyprus*	2000-2004	3	1	33.3	1	33.3	-	-	-	-	1	33.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	2005-2009	7	-	-	-	-	-	-	-	-	-	1	14.3	1	14.3	-	-	1	14.3	2	28.6	-	-	-	-	2	28.6	
	2010-2014	4	-	-	-	-	-	-	-	-	-	-	1	25.0	-	-	-	-	3	75.0	-	-	-	-	-	-	-	
India	2000-2004	3	-	-	-	-	1	33.3	1	33.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	33.3		
	2005-2009	11	1	9.1	-	-	-	-	1	9.1	3	27.3	1	9.1	-	-	-	-	2	18.2	-	-	-	-	3	27.3		
	2010-2014	11	-	-	-	-	1	9.1	1	9.1	2	18.2	1	9.1	-	-	1	9.1	4	36.4	-	-	-	-	1	9.1		
Israel*	2000-2004	260	12	4.6	3	1.2	90	34.6	15	5.8	7	2.7	50	19.2	21	8.1	7	2.7	33	12.7	1	0.4	12	4.6	9	3.5		
	2005-2009	318	25	7.9	8	2.5	75	23.6	27	8.5	10	3.1	46	14.5	31	9.7	7	2.2	47	14.8	1	0.3	27	8.5	14	4.4		
	2010-2014	246	12	4.9	8	3.3	69	28.0	11	4.5	6	2.4	43	17.5	30	12.2	4	1.6	40	16.3	1	0.4	9	3.7	13	5.3		
Japan	2000-2004	277	19	6.9	3	1.1	25	9.0	33	11.9	29	10.5	46	16.6	28	10.1	3	1.1	38	13.7	2	0.7	9	3.2	42	15.2		
	2005-2009	498	22	4.4	18	3.6	75	15.1	48	9.6	28	5.6	92	18.5	61	12.2	8	1.6	72	14.5	6	1.2	11	2.2	57	11.4		
	2010-2014	358	12	3.4	12	3.4	53	14.8	34	9.5	18	5.0	57	15.9	43	12.0	4	1.1	56	15.6	1	0.3	13	3.6	55	15.4		
Jordan*	2000-2004	145	13	9.0	-	-	13	9.0	26	17.9	21	14.5	39	26.9	14	9.7	5	3.4	11	7.6	-	-	-	-	3	2.1		
	2005-2009	159	8	5.0	3	1.9	19	11.9	25	15.7	15	9.4	49	30.8	20	12.6	4	2.5	13	8.2	1	0.6	2	1.3	-	-		
	2010-2014	171	7	4.1	3	1.8	27	15.8	21	12.3	4	2.3	41	24.0	18	10.5	2	1.2	28	16.4	1	0.6	1	0.6	18	10.5		
Korea*	2000-2004	726	53	7.3	12	1.7	16	2.2	73	10.1	49	6.7	197	27.1	89	12.3	26	3.6	50	6.9	6	0.8	-	-	155	21.3		
	2005-2009	684	40	5.8	5	0.7	17	2.5	57	8.3	54	7.9	169	24.7	126	18.4	14	2.0	112	16.4	6	0.9	1	0.1	83	12.1		
	2010-2014	591	24	4.1	9	1.5	14	2.4	74	12.5	39	6.6	142	24.0	138	23.4	15	2.5	89	15.1	5	0.8	6	1.0	36	6.1		
Kuwait*	2000-2004	18	2	11.1	-	-	2	11.1	2	11.1	1	5.6	6	33.3	1	5.6	-	-	3	16.7	1	5.6	-	-	-	-	-	
	2005-2009	21	2	9.5	-	-	3	14.3	2	9.5	2	9.5	6	28.6	1	4.8	-	-	3	14.3	-	-	2	9.5	-	-	-	
	2010-2014	9	1	11.1	-	-	-	-	1	11.1	-	-	2	22.2	-	-	1	11.1	4	44.4	-	-	-	-	-	-	-	
Malaysia	2005-2009	15	1	6.7	-	-	-	-	2	13.3	-	-	4	26.7	5	33.3	2	13.3	1	6.7	-	-	-	-	-	-	-	
	2010-2014	25	2	8.0	-	-	1	4.0	2	8.0	3	12.0	6	24.0	5	20.0	1	4.0	4	16.0	1	4.0	-	-	-	-	-	
Qatar*	2000-2004	12	-	-	-	-	2	16.7	1	8.3	-	-	2	16.7	1	8.3	-	-	4	33.3	-	-	-	-	2	16.7		
	2005-2009	8	-	-	-	-	1	12.5	3	37.5	2	25.0	1	12.5	1	12.5	-	-	-	-	-	-	-	-	-	-	-	
	2010-2014	11	-	-	-	-	5	45.5	1	9.1	-	-	1	9.1	2	18.2	-	-	-	-	-	-	-	-	2	18.2		
Singapore*	2000-2004	51	5	9.8	1	2.0	16	31.4	7	13.7	-	-	10	19.6	3	5.9	1	2.0	4	7.8	-	-	1	2.0	3	5.9		
	2005-2009	53	4	7.5	1	1.9	15	28.3	3	5.7	-	-	6	11.3	9	17.0	1	1.9	8	15.1	-	-	5	9.4	1	1.9		
	2010-2014	59	2	3.4	2	3.4	18	30.5	9	15.3	5	8.5	5	8.5	7	11.9	-	-	7	11.9	-	-	3	5.1	1	1.7		

Country	Period of diagnosis	All tumour types combined		Ependy-moma		Choroid plexus tumour		Astrocytoma WHO grade I and II		Astrocytoma WHO grade III and IV		Unspecified astrocytoma		Medullo-blastoma		Other and unspecified embryonal tumour		Oligodendro-glioma		Unspecified glioma		Neuro-epithelial glial tumour of uncertain origin		Neuronal and mixed neuronal-glioma		Unspecified neoplasm	
		No.	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.
Taiwan*	2000-2004	321	15	4.7	1	0.3	51	15.9	44	13.7	51	15.9	79	24.6	49	15.3	17	5.3	9	2.8	3	0.9	2	0.6	-	-	
	2005-2009	285	10	3.5	2	0.7	34	11.9	36	12.6	28	9.8	89	31.2	54	18.9	14	4.9	12	4.2	1	0.4	4	1.4	1	0.4	
	2010-2014	247	16	6.5	2	0.8	39	15.8	38	15.4	15	6.1	73	29.6	44	17.8	6	2.4	12	4.9	-	-	1	0.4	1	0.4	
Thailand	2000-2004	91	3	3.3	-	-	2	2.2	15	16.5	20	22.0	20	22.0	3	3.3	2	2.2	4	4.4	-	-	-	-	22	24.2	
	2005-2009	151	5	3.3	-	-	5	3.3	21	13.9	25	16.6	38	25.2	17	11.3	2	1.3	17	11.3	-	-	-	-	21	13.9	
	2010-2014	103	3	2.9	1	1.0	8	7.8	7	6.8	11	10.7	32	31.1	12	11.7	1	1.0	12	11.7	-	-	-	-	16	15.5	
Turkey	2000-2004	86	4	4.7	6	7.0	24	27.9	7	8.1	1	1.2	9	10.5	11	12.8	7	8.1	11	12.8	-	-	2	2.3	4	4.7	
	2005-2009	391	31	7.9	5	1.3	83	21.2	18	4.6	22	5.6	58	14.8	57	14.6	13	3.3	60	15.3	3	0.8	12	3.1	29	7.4	
	2010-2014	484	30	6.2	9	1.9	88	18.2	43	8.9	12	2.5	74	15.3	55	11.4	9	1.9	99	20.5	2	0.4	23	4.8	40	8.3	
Europe	2000-2004	7,289	393	5.4	200	2.7	2,079	28.5	451	6.2	462	6.3	1,352	18.5	676	9.3	295	4.0	513	7.0	34	0.5	438	6.0	396	5.4	
	2005-2009	7,931	384	4.8	253	3.2	2,246	28.3	547	6.9	359	4.5	1,364	17.2	824	10.4	307	3.9	567	7.1	39	0.5	606	7.6	435	5.5	
	2010-2014	6,927	278	4.0	228	3.3	1,977	28.5	566	8.2	211	3.0	1,195	17.3	802	11.6	176	2.5	538	7.8	30	0.4	579	8.4	347	5.0	
Belarus*	2000-2004	214	12	5.6	4	1.9	72	33.6	12	5.6	5	2.3	49	22.9	15	7.0	27	12.6	3	1.4	-	-	8	3.7	7	3.3	
	2005-2009	173	17	9.8	2	1.2	60	34.7	10	5.8	3	1.7	21	12.1	17	9.8	12	6.9	3	1.7	1	0.6	9	5.2	18	10.4	
	2010-2014	192	18	9.4	5	2.6	79	41.1	11	5.7	-	-	22	11.5	19	9.9	5	2.6	8	4.2	-	-	8	4.2	17	8.9	
Belgium*	2000-2004	60	4	6.7	7	11.7	21	35.0	6	10.0	-	-	8	13.3	3	5.0	3	5.0	3	5.0	-	-	5	8.3	-	-	
	2005-2009	298	7	2.3	18	6.0	104	34.9	23	7.7	2	0.7	42	14.1	31	10.4	13	4.4	26	8.7	3	1.0	17	5.7	12	4.0	
	2010-2014	377	8	2.1	18	4.8	119	31.6	29	7.7	6	1.6	60	15.9	40	10.6	12	3.2	37	9.8	2	0.5	34	9.0	12	3.2	
Croatia*	2000-2004	108	6	5.6	1	0.9	11	10.2	4	3.7	18	16.7	25	23.1	12	11.1	1	0.9	11	10.2	-	-	-	-	19	17.6	
	2005-2009	104	9	8.7	-	-	27	26.0	8	7.7	15	14.4	15	14.4	7	6.7	2	1.9	4	3.8	-	-	7	6.7	10	9.6	
	2010-2014	87	4	4.6	-	-	10	11.5	10	11.5	8	9.2	19	21.8	17	19.5	2	2.3	12	13.8	-	-	4	4.6	1	1.1	
Czech Republic*	2000-2004	126	10	7.9	3	2.4	39	31.0	20	15.9	8	6.3	14	11.1	14	11.1	5	4.0	6	4.8	1	0.8	-	-	6	4.8	
	2005-2009	131	8	6.1	5	3.8	61	46.6	10	7.6	6	4.6	-	-	26	19.8	4	3.1	-	-	-	-	6	4.6	5	3.8	
	2010-2014	139	7	5.0	3	2.2	56	40.3	15	10.8	1	0.7	17	12.2	24	17.3	2	1.4	3	2.2	-	-	6	4.3	5	3.6	
Denmark*	2000-2004	168	8	4.8	2	1.2	43	25.6	8	4.8	13	7.7	29	17.3	16	9.5	2	1.2	4	2.4	1	0.6	15	8.9	27	16.1	
	2005-2009	153	3	2.0	4	2.6	37	24.2	3	2.0	6	3.9	23	15.0	17	11.1	3	2.0	6	3.9	1	0.7	2	1.3	48	31.4	
	2010-2014	158	-	-	2	1.3	21	13.3	8	5.1	2	1.3	18	11.4	13	8.2	4	2.5	-	-	-	-	3	1.9	87	55.1	
Estonia*	2000-2004	38	2	5.3	2	5.3	23	60.5	1	2.6	-	-	4	10.5	3	7.9	1	2.6	-	-	-	-	2	5.3	-	-	
	2005-2009	29	1	3.4	2	6.9	12	41.4	1	3.4	1	3.4	4	13.8	5	17.2	3	10.3	-	-	-	-	-	-	-	-	
	2010-2014	20	3	15.0	1	5.0	5	25.0	-	-	2	10.0	6	30.0	3	15.0	-	-	-	-	-	-	-	-	-	-	-
Finland*	2000-2004	159	7	4.4	3	1.9	66	41.5	12	7.5	7	4.4	16	10.1	20	12.6	3	1.9	1	0.6	1	0.6	20	12.6	3	1.9	
	2005-2009	146	6	4.1	4	2.7	56	38.4	9	6.2	16	11.0	18	12.3	14	9.6	4	2.7	-	-	2	1.4	16	11.0	1	0.7	
	2010-2014	178	8	4.5	12	6.7	67	37.6	10	5.6	9	5.1	22	12.4	23	12.9	4	2.2	1	0.6	1	0.6	21	11.8	-	-	
France	2000-2004	1,621	73	4.5	58	3.6	518	32.0	40	2.5	-	-	309	19.1	140	8.6	114	7.0	150	9.3	3	0.2	183	11.3	33	2.0	
	2005-2009	1,655	66	4.0	58	3.5	461	27.9	68	4.1	-	-	284	17.2	166	10.0	131	7.9	159	9.6	6	0.4	226	13.7	30	1.8	
	2010-2014	1,050	34	3.2	38	3.6	303	28.9	61	5.8	-	-	188	17.9	108	10.3	46	4.4	109	10.4	5	0.5	150	14.3	8	0.8	
Germany	2000-2004	149	6	4.0	4	2.7	34	22.8	13	8.7	16	10.7	31	20.8	25	16.8	5	3.4	8	5.4	1	0.7	4	2.7	2	1.3	
	2005-2009	274	8	2.9	7	2.6	81	29.6	33	12.0	5	1.8	58	21.2	42	15.3	5	1.8	21	7.7	-	-	9	3.3	5	1.8	
	2010-2014	199	5	2.5	4	2.0	42	21.1	35	17.6	4	2.0	34	17.1	37	18.6	3	1.5	24	12.1	1	0.5	9	4.5	1	0.5	
Greece*	2010-2014	226	5	2.2	7	3.1	66	29.2	11	4.9	-	-	57	25.2	35	15.5	6	2.7	18	8.0	1	0.4	18	8.0	2	0.9	
Iceland*	2000-2004	10	-	-	-	-	5	50.0	1	10.0	1	10.0	-	-	-	-	-	-	-	-	-	-	2	20.0	1	10.0	
	2005-2009	14	-	-	-	-	6	42.9	-	-	2	14.3	-	-	-	-	1	7.1	2	14.3	-	-	-	-	3	21.4	
	2010-2014	8	-	-	-	-	3	37.5	-	-	-	-	2	25.0	1	12.5	1	12.5	1	12.5	-	-	-	-	-	-	-

Country	Period of diagnosis	All tumour types combined			Ependy-moma		Choroid plexus tumour		Astrocytoma WHO grade I and II		Astrocytoma WHO grade III and IV		Unspecified astrocytoma		Medullo-blastoma		Other and unspecified embryonal tumour		Oligodendro-glioma		Unspecified glioma		Neuro-epithelial glial tumour of uncertain origin		Neuronal and mixed neuronal-glia tumour		Unspecified neoplasm	
		No.	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Ireland*	2000-2004	105	3	2.9	4	3.8	46	43.8	1	1.0	17	16.2	4	3.8	22	21.0	3	2.9	3	2.9	-	-	2	1.9	-	-		
	2005-2009	110	10	9.1	4	3.6	42	38.2	9	8.2	8	7.3	8	7.3	18	16.4	3	2.7	1	0.9	1	0.9	5	4.5	1	0.9		
	2010-2014	103	2	1.9	-	-	38	36.9	10	9.7	4	3.9	12	11.7	13	12.6	8	7.8	2	1.9	1	1.0	12	11.7	1	1.0		
Italy	2000-2004	524	33	6.3	12	2.3	112	21.4	36	6.9	36	6.9	90	17.2	31	5.9	10	1.9	37	7.1	4	0.8	22	4.2	101	19.3		
	2005-2009	707	45	6.4	17	2.4	165	23.3	45	6.4	42	5.9	121	17.1	47	6.6	13	1.8	40	5.7	2	0.3	45	6.4	125	17.7		
	2010-2014	309	15	4.9	5	1.6	66	21.4	20	6.5	19	6.1	50	16.2	23	7.4	3	1.0	19	6.1	1	0.3	25	8.1	63	20.4		
Latvia*	2000-2004	59	0	0.0	0	0.0	2	3.4	5	8.5	25	42.4	1	1.7	1	1.7	2	3.4	1	1.7	2	3.4	0	0.0	20	33.9		
	2005-2009	21	2	9.5	0	0.0	3	14.3	5	23.8	1	4.8	3	14.3	1	4.8	0	0.0	0	0.0	0	0.0	0	0.0	6	28.6		
	2010-2014	49	1	2.0	0	0.0	7	14.3	13	26.5	10	20.4	7	14.3	3	6.1	0	0.0	2	4.1	0	0.0	0	0.0	6	12.2		
Lithuania*	2000-2004	51	3	5.9	-	-	5	9.8	6	11.8	15	29.4	14	27.5	3	5.9	2	3.9	2	3.9	1	2.0	-	-	-	-		
	2005-2009	39	3	7.7	1	2.6	6	15.4	2	5.1	6	15.4	11	28.2	3	7.7	3	7.7	3	7.7	-	-	1	2.6	-	-		
	2010-2014	14	2	14.3	-	-	3	21.4	3	21.4	-	-	3	21.4	1	7.1	-	-	1	7.1	-	-	1	7.1	-	-		
Malta*	2000-2004	10	1	10.0	-	-	3	30.0	2	20.0	-	-	2	20.0	1	10.0	-	-	-	-	-	-	-	1	10.0	-	-	
	2005-2009	6	-	-	-	-	2	33.3	-	-	1	16.7	2	33.3	-	-	-	-	1	16.7	-	-	-	-	-	-		
	2010-2014	8	1	12.5	-	-	-	-	-	-	3	37.5	1	12.5	-	-	-	-	2	25.0	-	-	1	12.5	-	-		
Netherlands*	2000-2004	453	32	7.1	9	2.0	142	31.3	40	8.8	1	0.2	76	16.8	50	11.0	18	4.0	44	9.7	3	0.7	26	5.7	12	2.6		
	2005-2009	460	14	3.0	12	2.6	141	30.7	33	7.2	1	0.2	81	17.6	47	10.2	10	2.2	49	10.7	2	0.4	52	11.3	18	3.9		
	2010-2014	475	13	2.7	18	3.8	152	32.0	29	6.1	-	-	80	16.8	54	11.4	8	1.7	53	11.2	1	0.2	46	9.7	21	4.4		
Norway*	2000-2004	165	7	4.2	11	6.7	52	31.5	6	3.6	4	2.4	18	10.9	16	9.7	7	4.2	11	6.7	-	-	18	10.9	15	9.1		
	2005-2009	160	1	0.6	8	5.0	45	28.1	12	7.5	10	6.3	16	10.0	21	13.1	9	5.6	12	7.5	-	-	13	8.1	13	8.1		
	2010-2014	130	3	2.3	4	3.1	45	34.6	10	7.7	2	1.5	8	6.2	17	13.1	1	0.8	15	11.5	1	0.8	18	13.8	6	4.6		
Poland*	2000-2004	573	41	7.2	5	0.9	88	15.4	56	9.8	91	15.9	162	28.3	82	14.3	23	4.0	17	3.0	4	0.7	2	0.3	2	0.3		
	2005-2009	543	38	7.0	10	1.8	84	15.5	69	12.7	68	12.5	153	28.2	74	13.6	24	4.4	16	2.9	4	0.7	2	0.4	1	0.2		
	2010-2014	435	41	9.4	16	3.7	42	9.7	53	12.2	29	6.7	138	31.7	70	16.1	19	4.4	24	5.5	1	0.2	1	0.2	1	0.2		
Portugal*	2000-2004	173	3	1.7	8	4.6	44	25.4	9	5.2	20	11.6	39	22.5	11	6.4	11	6.4	19	11.0	1	0.6	2	1.2	6	3.5		
	2005-2009	188	11	5.9	5	2.7	41	21.8	13	6.9	17	9.0	43	22.9	17	9.0	14	7.4	13	6.9	1	0.5	7	3.7	6	3.2		
	2010-2014	139	6	4.3	2	1.4	43	30.9	16	11.5	6	4.3	20	14.4	22	15.8	-	-	8	5.8	1	0.7	14	10.1	1	0.7		
Romania	2005-2009	9	2	22.2	-	-	1	11.1	-	-	-	-	2	22.2	1	11.1	-	-	2	22.2	-	-	-	-	1	11.1		
	2010-2014	10	-	-	-	-	2	20.0	-	-	-	-	2	20.0	1	10.0	2	20.0	2	20.0	-	-	-	-	1	10.0		
Russian Federation	2000-2004	67	2	3.0	-	-	2	3.0	9	13.4	26	38.8	14	20.9	2	3.0	7	10.4	1	1.5	2	3.0	-	-	2	3.0		
	2005-2009	89	2	2.2	-	-	5	5.6	13	14.6	24	27.0	18	20.2	8	9.0	4	4.5	7	7.9	1	1.1	-	-	7	7.9		
	2010-2014	124	6	4.8	3	2.4	5	4.0	20	16.1	32	25.8	27	21.8	15	12.1	5	4.0	6	4.8	1	0.8	-	-	4	3.2		
Slovakia*	2000-2004	139	7	5.0	2	1.4	62	44.6	4	2.9	1	0.7	23	16.5	11	7.9	7	5.0	3	2.2	-	-	5	3.6	14	10.1		
	2005-2009	129	13	10.1	4	3.1	46	35.7	9	7.0	2	1.6	24	18.6	12	9.3	4	3.1	3	2.3	1	0.8	-	-	11	8.5		
	2010-2014	36	2	5.6	1	2.8	10	27.8	7	19.4	1	2.8	8	22.2	2	5.6	2	5.6	1	2.8	-	-	1	2.8	1	2.8		
Slovenia*	2000-2004	34	-	-	1	2.9	11	32.4	4	11.8	-	-	9	26.5	3	8.8	2	5.9	2	5.9	-	-	2	5.9	-	-		
	2005-2009	43	-	-	1	2.3	15	34.9	7	16.3	-	-	10	23.3	8	18.6	-	-	-	-	1	2.3	1	2.3	-	-		
	2010-2014	26	-	-	2	7.7	4	15.4	4	15.4	-	-	10	38.5	3	11.5	1	3.8	1	3.8	-	-	1	3.8	-	-		
Spain	2000-2004	389	28	7.2	9	2.3	102	26.2	21	5.4	50	12.9	88	22.6	42	10.8	4	1.0	23	5.9	1	0.3	9	2.3	12	3.1		
	2005-2009	516	39	7.6	17	3.3	143	27.7	20	3.9	38	7.4	109	21.1	64	12.4	6	1.2	33	6.4	2	0.4	31	6.0	14	2.7		
	2010-2014	417	29	7.0	13	3.1	117	28.1	26	6.2	17	4.1	93	22.3	55	13.2	5	1.2	19	4.6	2	0.5	33	7.9	8	1.9		
Sweden*	2000-2004	219	13	5.9	5	2.3	67	30.6	11	5.0	20	9.1	27	12.3	31	14.2	6	2.7	6	2.7	1	0.5	11	5.0	21	9.6		
	2005-2009	222	12	5.4	8	3.6	57	25.7	15	6.8	27	12.2	23	10.4	22	9.9	7	3.2	1	0.5	1	0.5	26	11.7	23	10.4		
	2010-2014	250	7	2.8	10	4.0	78	31.2	22	8.8	19	7.6	33	13.2	27	10.8	10	4.0	5	2.0	-	-	19	7.6	20	8.0		

Country	Period of diagnosis	All tumour types combined		Ependy-moma		Choroid plexus tumour		Astrocytoma WHO grade I and II		Astrocytoma WHO grade III and IV		Unspecified astrocytoma		Medullo-blastoma		Other and unspecified embryonal tumour		Oligodendro-glioma		Unspecified glioma		Neuro-epithelial glial tumour of uncertain origin		Neuronal and mixed neuronal-glioma		Unspecified neoplasm	
		No.	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.
Switzerland*	2000-2004	167	5	3.0	2	1.2	70	41.9	11	6.6	3	1.8	33	19.8	21	12.6	5	3.0	-	-	1	0.6	15	9.0	1	0.6	
	2005-2009	149	1	0.7	7	4.7	51	34.2	11	7.4	3	2.0	26	17.4	30	20.1	2	1.3	2	1.3	1	0.7	14	9.4	1	0.7	
	2010-2014	155	3	1.9	5	3.2	66	42.6	17	11.0	2	1.3	26	16.8	23	14.8	2	1.3	2	1.3	-	-	9	5.8	-	-	
United Kingdom*	2000-2004	1,508	87	5.8	48	3.2	439	29.1	113	7.5	85	5.6	267	17.7	101	6.7	27	1.8	158	10.5	7	0.5	84	5.6	92	6.1	
	2005-2009	1,563	66	4.2	59	3.8	494	31.6	119	7.6	55	3.5	249	15.9	126	8.1	30	1.9	163	10.4	9	0.6	117	7.5	76	4.9	
	2010-2014	1,613	55	3.4	59	3.7	528	32.7	126	7.8	35	2.2	232	14.4	153	9.5	25	1.5	163	10.1	11	0.7	145	9.0	81	5.0	
Oceania	2000-2004	545	49	9.0	7	1.3	81	14.9	61	11.2	29	5.3	87	16.0	66	12.1	24	4.4	64	11.7	1	0.2	18	3.3	58	10.6	
	2005-2009	538	23	4.3	15	2.8	83	15.4	66	12.3	13	2.4	103	19.1	88	16.4	13	2.4	74	13.8	1	0.2	21	3.9	38	7.1	
	2010-2014	510	31	6.1	13	2.5	80	15.7	49	9.6	10	2.0	94	18.4	80	15.7	14	2.7	78	15.3	1	0.2	29	5.7	31	6.1	
Australia*	2000-2004	453	41	9.1	4	0.9	61	13.5	53	11.7	26	5.7	70	15.5	58	12.8	18	4.0	51	11.3	1	0.2	18	4.0	52	11.5	
	2005-2009	478	20	4.2	15	3.1	79	16.5	54	11.3	13	2.7	88	18.4	84	17.6	11	2.3	61	12.8	1	0.2	21	4.4	31	6.5	
	2010-2014	445	23	5.2	12	2.7	78	17.5	42	9.4	9	2.0	86	19.3	68	15.3	13	2.9	59	13.3	1	0.2	28	6.3	26	5.8	
New Zealand*	2000-2004	92	8	8.7	3	3.3	20	21.7	8	8.7	3	3.3	17	18.5	8	8.7	6	6.5	13	14.1	-	-	-	-	6	6.5	
	2005-2009	60	3	5.0	-	-	4	6.7	12	20.0	-	-	15	25.0	4	6.7	2	3.3	13	21.7	-	-	-	-	7	11.7	
	2010-2014	65	8	12.3	1	1.5	2	3.1	7	10.8	1	1.5	8	12.3	12	18.5	1	1.5	19	29.2	-	-	1	1.5	5	7.7	

\* Data with 100% coverage of the national population.



Supplementary Table 2. Histology distribution, by continent, country, and calendar period. Adults (15-99 years).

Country	Period of diagnosis	All tumour types combined		Ependymoma and choroid plexus tumour		Diffuse and anaplastic astrocytoma		Glioblastoma		Other specified astrocytoma		Unspecified astrocytoma		Oligodendroglial tumour		Medulloblastoma		Other and unspecified embryonal tumour		Unspecified glioma		Other specified neuro-epithelial tumour		Unspecified tumour	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Africa	2000-2004	44		-	-	3	6.8	21	47.7	-	-	2	4.5	1	2.3	-	-	1	2.3	1	2.3	-	-	15	34.1
	2005-2009	203		3	1.5	5	2.5	42	20.7	1	0.5	20	9.9	2	1.0	2	1.0	1	0.5	5	2.5	-	-	122	60.1
	2010-2014	338		10	3.0	6	1.8	105	31.1	4	1.2	17	5.0	6	1.8	-	-	8	2.4	19	5.6	1	0.3	162	47.9
Algeria	2000-2004	31		-	-	1	3.2	13	41.9	-	-	1	3.2	1	3.2	-	-	-	-	1	3.2	-	-	14	45.2
	2005-2009	159		3	1.9	1	0.6	29	18.2	-	-	16	10.1	1	0.6	1	0.6	-	-	5	3.1	-	-	103	64.8
	2010-2014	187		5	2.7	1	0.5	66	35.3	-	-	9	4.8	5	2.7	-	-	2	1.1	11	5.9	-	-	88	47.1
Mauritius*	2010-2014	36		1	2.8	1	2.8	17	47.2	-	-	6	16.7	-	-	-	-	-	-	1	2.8	-	-	10	27.8
Nigeria	2005-2009	40		-	-	4	10.0	11	27.5	1	2.5	4	10.0	1	2.5	1	2.5	-	-	-	-	-	-	18	45.0
	2010-2014	104		3	2.9	3	2.9	22	21.2	4	3.8	1	1.0	1	1.0	-	-	6	5.8	5	4.8	1	1.0	58	55.8
South Africa	2000-2004	1		-	-	-	-	1	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2005-2009	4		-	-	-	-	2	50.0	-	-	-	-	-	-	-	-	1	25.0	-	-	-	-	1	25.0
	2010-2014	11		1	9.1	1	9.1	-	-	-	-	1	9.1	-	-	-	-	-	-	2	18.2	-	-	6	54.5
America (Central and South)	2000-2004	1,933		40	2.1	262	13.6	660	34.1	33	1.7	342	17.7	173	8.9	17	0.9	17	0.9	56	2.9	8	0.4	325	16.8
	2005-2009	3,361		63	1.9	363	10.8	1,218	36.2	48	1.4	545	16.2	288	8.6	32	1.0	40	1.2	121	3.6	30	0.9	613	18.2
	2010-2014	2,792		68	2.4	282	10.1	958	34.3	44	1.6	364	13.0	280	10.0	41	1.5	30	1.1	124	4.4	23	0.8	578	20.7
Argentina	2000-2004	110		2	1.8	15	13.6	30	27.3	-	-	23	20.9	17	15.5	-	-	4	3.6	3	2.7	-	-	16	14.5
	2005-2009	510		10	2.0	62	12.2	164	32.2	8	1.6	87	17.1	45	8.8	1	0.2	6	1.2	20	3.9	4	0.8	103	20.2
	2010-2014	465		13	2.8	41	8.8	159	34.2	9	1.9	61	13.1	35	7.5	2	0.4	9	1.9	34	7.3	3	0.6	99	21.3
Brazil	2000-2004	322		9	2.8	51	15.8	133	41.3	3	0.9	62	19.3	15	4.7	2	0.6	5	1.6	10	3.1	-	-	32	9.9
	2005-2009	492		9	1.8	50	10.2	225	45.7	1	0.2	80	16.3	28	5.7	1	0.2	3	0.6	27	5.5	2	0.4	66	13.4
	2010-2014	327		11	3.4	28	8.6	149	45.6	2	0.6	38	11.6	29	8.9	3	0.9	2	0.6	18	5.5	-	-	47	14.4
Chile	2000-2004	40		-	-	8	20.0	5	12.5	-	-	3	7.5	5	12.5	1	2.5	1	2.5	-	-	-	-	17	42.5
	2005-2009	233		6	2.6	27	11.6	74	31.8	3	1.3	10	4.3	18	7.7	7	3.0	4	1.7	4	1.7	2	0.9	78	33.5
	2010-2014	111		1	0.9	13	11.7	33	29.7	4	3.6	6	5.4	5	4.5	2	1.8	-	-	6	5.4	1	0.9	40	36.0
Colombia	2000-2004	433		10	2.3	49	11.3	132	30.5	6	1.4	52	12.0	37	8.5	4	0.9	3	0.7	14	3.2	1	0.2	125	28.9
	2005-2009	560		10	1.8	55	9.8	172	30.7	4	0.7	59	10.5	45	8.0	6	1.1	8	1.4	21	3.8	5	0.9	175	31.3
	2010-2014	481		18	3.7	52	10.8	155	32.2	8	1.7	39	8.1	47	9.8	2	0.4	12	2.5	20	4.2	4	0.8	124	25.8
Costa Rica*	2000-2004	260		4	1.5	21	8.1	68	26.2	1	0.4	64	24.6	43	16.5	2	0.8	-	-	1	0.4	1	0.4	55	21.2
	2005-2009	376		5	1.3	20	5.3	103	27.4	1	0.3	105	27.9	63	16.8	1	0.3	4	1.1	10	2.7	-	-	64	17.0
	2010-2014	424		10	2.4	19	4.5	162	38.2	1	0.2	64	15.1	76	17.9	4	0.9	1	0.2	8	1.9	3	0.7	76	17.9
Ecuador	2000-2004	251		4	1.6	30	12.0	48	19.1	-	-	104	41.4	20	8.0	6	2.4	-	-	11	4.4	1	0.4	27	10.8
	2005-2009	522		7	1.3	75	14.4	98	18.8	4	0.8	179	34.3	41	7.9	13	2.5	5	1.0	20	3.8	2	0.4	78	14.9
	2010-2014	650		9	1.4	114	17.5	111	17.1	8	1.2	151	23.2	61	9.4	27	4.2	2	0.3	21	3.2	2	0.3	144	22.2
Guadeloupe	2005-2009	17		-	-	-	-	10	58.8	-	-	-	-	1	5.9	-	-	-	-	2	11.8	4	23.5	-	-
	2010-2014	37		1	2.7	-	-	28	75.7	-	-	-	-	2	5.4	-	-	1	2.7	1	2.7	4	10.8	-	-
Martinique*	2000-2004	46		-	-	3	6.5	17	37.0	1	2.2	14	30.4	5	10.9	1	2.2	-	-	-	-	4	8.7	1	2.2
	2005-2009	51		2	3.9	2	3.9	33	64.7	-	-	1	2.0	4	7.8	2	3.9	-	-	3	5.9	2	3.9	2	3.9
	2010-2014	38		-	-	-	-	32	84.2	1	2.6	-	-	1	2.6	-	-	-	-	1	2.6	2	5.3	1	2.6

Country	Period of diagnosis	All tumour types combined		Ependymoma and choroid plexus tumour		Diffuse and anaplastic astrocytoma		Glioblastoma		Other specified astrocytoma		Unspecified astrocytoma		Oligodendroglial tumour		Medulloblastoma		Other and unspecified embryonal tumour		Unspecified glioma		Other specified neuroepithelial tumour		Unspecified tumour	
		No.	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.
Puerto Rico*	2000-2004	471	11	2.3	85	18.0	227	48.2	22	4.7	20	4.2	31	6.6	1	0.2	4	0.8	17	3.6	1	0.2	52	11.0	
	2005-2009	600	14	2.3	72	12.0	339	56.5	27	4.5	24	4.0	43	7.2	1	0.2	10	1.7	14	2.3	9	1.5	47	7.8	
	2010-2014	259	5	1.9	15	5.8	129	49.8	11	4.2	5	1.9	24	9.3	1	0.4	3	1.2	15	5.8	4	1.5	47	18.1	
America (North)	2000-2004	78,607	1,163	1.5	9,412	12.0	44,298	56.4	2,472	3.1	2,003	2.5	9,087	11.6	103	0.1	560	0.7	4,019	5.1	600	0.8	4,890	6.2	
	2005-2009	90,869	2,287	2.5	8,729	9.6	49,748	54.7	2,730	3.0	2,781	3.1	8,833	9.7	139	0.2	583	0.6	4,559	5.0	2,271	2.5	8,209	9.0	
	2010-2014	78,267	1,967	2.5	6,545	8.4	43,568	55.7	1,996	2.6	2,605	3.3	6,282	8.0	105	0.1	443	0.6	3,644	4.7	1,998	2.6	9,114	11.6	
Canada	2000-2004	9,829	127	1.3	621	6.3	5,078	51.7	215	2.2	588	6.0	1,278	13.0	10	0.1	70	0.7	554	5.6	60	0.6	1,228	12.5	
	2005-2009	11,127	194	1.7	633	5.7	5,730	51.5	247	2.2	604	5.4	1,302	11.7	15	0.1	70	0.6	644	5.8	174	1.6	1,514	13.6	
	2010-2014	12,922	200	1.5	512	4.0	5,656	43.8	167	1.3	357	2.8	1,011	7.8	11	0.1	66	0.5	501	3.9	288	2.2	4,153	32.1	
United States	2000-2004	68,778	1,036	1.5	8,791	12.8	39,220	57.0	2,257	3.3	1,415	2.1	7,809	11.4	93	0.1	490	0.7	3,465	5.0	540	0.8	3,662	5.3	
	2005-2009	79,742	2,093	2.6	8,096	10.2	44,018	55.2	2,483	3.1	2,177	2.7	7,531	9.4	124	0.2	513	0.6	3,915	4.9	2,097	2.6	6,695	8.4	
	2010-2014	65,345	1,767	2.7	6,033	9.2	37,912	58.0	1,829	2.8	2,248	3.4	5,271	8.1	94	0.1	377	0.6	3,143	4.8	1,710	2.6	4,961	7.6	
Asia	2000-2004	14,498	254	1.8	1,663	11.5	4,935	34.0	237	1.6	1,334	9.2	1,499	10.3	143	1.0	175	1.2	859	5.9	210	1.4	3,189	22.0	
	2005-2009	26,024	458	1.8	2,354	9.0	8,839	34.0	369	1.4	1,755	6.7	2,457	9.4	176	0.7	337	1.3	1,975	7.6	445	1.7	6,859	26.4	
	2010-2014	26,019	504	1.9	2,145	8.2	9,832	37.8	369	1.4	1,216	4.7	2,663	10.2	147	0.6	252	1.0	1,890	7.3	475	1.8	6,526	25.1	
China	2000-2004	1,413	7	0.5	63	4.5	45	3.2	28	2.0	133	9.4	35	2.5	5	0.4	5	0.4	185	13.1	39	2.8	868	61.4	
	2005-2009	4,763	47	1.0	167	3.5	298	6.3	45	0.9	304	6.4	202	4.2	20	0.4	22	0.5	504	10.6	87	1.8	3,067	64.4	
	2010-2014	4,552	55	1.2	190	4.2	409	9.0	37	0.8	167	3.7	220	4.8	15	0.3	19	0.4	399	8.8	123	2.7	2,918	64.1	
Cyprus*	2000-2004	25	1	4.0	6	24.0	9	36.0	-	-	3	12.0	3	12.0	-	-	-	-	1	4.0	-	-	2	8.0	
	2005-2009	175	4	2.3	33	18.9	101	57.7	3	1.7	5	2.9	10	5.7	-	-	2	1.1	9	5.1	-	-	8	4.6	
	2010-2014	189	3	1.6	28	14.8	129	68.3	1	0.5	4	2.1	15	7.9	-	-	1	0.5	5	2.6	-	-	3	1.6	
India	2000-2004	34	1	2.9	9	26.5	6	17.6	-	-	1	2.9	-	-	1	2.9	-	-	3	8.8	-	-	13	38.2	
	2005-2009	124	3	2.4	9	7.3	29	23.4	-	-	8	6.5	11	8.9	-	-	-	-	16	12.9	2	1.6	46	37.1	
	2010-2014	85	1	1.2	12	14.1	18	21.2	1	1.2	6	7.1	7	8.2	-	-	-	-	8	9.4	-	-	32	37.6	
Israel*	2000-2004	1,581	30	1.9	214	13.5	829	52.4	57	3.6	43	2.7	168	10.6	4	0.3	11	0.7	58	3.7	37	2.3	130	8.2	
	2005-2009	1,789	29	1.6	208	11.6	941	52.6	69	3.9	26	1.5	171	9.6	7	0.4	16	0.9	115	6.4	41	2.3	166	9.3	
	2010-2014	1,552	20	1.3	175	11.3	817	52.6	54	3.5	28	1.8	143	9.2	2	0.1	7	0.5	69	4.4	23	1.5	214	13.8	
Japan	2000-2004	2,693	44	1.6	250	9.3	1,068	39.7	27	1.0	242	9.0	153	5.7	11	0.4	23	0.9	245	9.1	32	1.2	598	22.2	
	2005-2009	5,516	76	1.4	535	9.7	2,201	39.9	65	1.2	358	6.5	469	8.5	20	0.4	52	0.9	479	8.7	119	2.2	1,142	20.7	
	2010-2014	4,481	60	1.3	359	8.0	1,700	37.9	70	1.6	206	4.6	404	9.0	10	0.2	39	0.9	343	7.7	97	2.2	1,193	26.6	
Jordan*	2000-2004	463	15	3.2	111	24.0	162	35.0	14	3.0	45	9.7	36	7.8	11	2.4	9	1.9	34	7.3	2	0.4	24	5.2	
	2005-2009	477	14	2.9	80	16.8	250	52.4	6	1.3	23	4.8	44	9.2	7	1.5	11	2.3	24	5.0	-	-	18	3.8	
	2010-2014	515	12	2.3	60	11.7	262	50.9	6	1.2	13	2.5	49	9.5	16	3.1	7	1.4	36	7.0	3	0.6	51	9.9	
Korea*	2000-2004	4,581	75	1.6	468	10.2	1,369	29.9	30	0.7	358	7.8	618	13.5	56	1.2	80	1.7	195	4.3	66	1.4	1,266	27.6	
	2005-2009	5,816	117	2.0	445	7.7	2,054	35.3	35	0.6	423	7.3	710	12.2	51	0.9	92	1.6	454	7.8	109	1.9	1,326	22.8	
	2010-2014	6,693	171	2.6	526	7.9	2,845	42.5	49	0.7	416	6.2	875	13.1	29	0.4	81	1.2	599	8.9	131	2.0	971	14.5	
Kuwait*	2000-2004	64	3	4.7	12	18.8	28	43.8	1	1.6	4	6.3	4	6.3	3	4.7	-	-	6	9.4	1	1.6	2	3.1	
	2005-2009	83	-	-	6	7.2	42	50.6	2	2.4	7	8.4	6	7.2	5	6.0	-	-	9	10.8	2	2.4	4	4.8	
	2010-2014	77	-	-	7	9.1	42	54.5	1	1.3	7	9.1	11	14.3	-	-	1	1.3	5	6.5	-	-	3	3.9	

Country	Period of diagnosis	All tumour types combined		Ependymoma and choroid plexus tumour		Diffuse and anaplastic astrocytoma		Glioblastoma		Other specified astrocytoma		Unspecified astrocytoma		Oligodendroglial tumour		Medulloblastoma		Other and unspecified embryonal tumour		Unspecified glioma		Other specified neuro-epithelial tumour		Unspecified tumour	
		No.	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.
Malaysia	2005-2009	64	1	1.6	2	3.1	15	23.4	-	-	17	26.6	5	7.8	1	1.6	2	3.1	2	3.1	-	-	19	29.7	
	2010-2014	67	2	3.0	4	6.0	20	29.9	-	-	15	22.4	7	10.4	1	1.5	2	3.0	3	4.5	-	-	13	19.4	
Qatar*	2000-2004	48	2	4.2	8	16.7	15	31.3	1	2.1	3	6.3	4	8.3	-	-	-	-	6	12.5	1	2.1	8	16.7	
	2005-2009	104	3	2.9	15	14.4	38	36.5	2	1.9	1	1.0	21	20.2	-	-	-	-	12	11.5	3	2.9	9	8.7	
Singapore*	2010-2014	126	3	2.4	22	17.5	50	39.7	1	0.8	1	0.8	34	27.0	1	0.8	1	0.8	2	1.6	3	2.4	8	6.3	
	2000-2004	242	7	2.9	32	13.2	111	45.9	8	3.3	12	5.0	38	15.7	-	-	5	2.1	3	1.2	6	2.5	20	8.3	
	2005-2009	346	14	4.0	44	12.7	152	43.9	16	4.6	7	2.0	63	18.2	1	0.3	13	3.8	18	5.2	8	2.3	10	2.9	
Taiwan*	2010-2014	445	17	3.8	31	7.0	211	47.4	18	4.0	21	4.7	68	15.3	-	-	9	2.0	23	5.2	18	4.0	29	6.5	
	2000-2004	2,076	45	2.2	326	15.7	940	45.3	34	1.6	294	14.2	307	14.8	34	1.6	32	1.5	50	2.4	13	0.6	1	0.0	
	2005-2009	2,226	41	1.8	422	19.0	1,090	49.0	24	1.1	176	7.9	321	14.4	32	1.4	47	2.1	52	2.3	14	0.6	7	0.3	
Thailand	2010-2014	2,606	48	1.8	413	15.8	1,382	53.0	39	1.5	166	6.4	399	15.3	20	0.8	39	1.5	55	2.1	30	1.2	15	0.6	
	2000-2004	625	8	1.3	53	8.5	124	19.8	13	2.1	180	28.8	29	4.6	10	1.6	4	0.6	14	2.2	-	-	190	30.4	
	2005-2009	1,045	12	1.1	71	6.8	201	19.2	18	1.7	276	26.4	38	3.6	7	0.7	26	2.5	35	3.3	-	-	361	34.5	
Turkey	2010-2014	909	13	1.4	59	6.5	239	26.3	5	0.6	50	5.5	53	5.8	5	0.6	9	1.0	23	2.5	7	0.8	446	49.1	
	2000-2004	653	16	2.5	111	17.0	229	35.1	24	3.7	16	2.5	104	15.9	8	1.2	6	0.9	59	9.0	13	2.0	67	10.3	
	2005-2009	3,496	97	2.8	317	9.1	1,427	40.8	84	2.4	124	3.5	386	11.0	25	0.7	54	1.5	246	7.0	60	1.7	676	19.3	
Europe	2010-2014	3,722	99	2.7	259	7.0	1,708	45.9	87	2.3	116	3.1	378	10.2	48	1.3	37	1.0	320	8.6	40	1.1	630	16.9	
	2000-2004	75,155	1,320	1.8	8,295	11.0	34,550	46.0	1,226	1.6	4,638	6.2	7,031	9.4	285	0.4	639	0.9	5,007	6.7	868	1.2	11,296	15.0	
	2005-2009	95,440	1,747	1.8	9,551	10.0	48,974	51.3	1,541	1.6	3,885	4.1	8,890	9.3	364	0.4	795	0.8	5,156	5.4	1,259	1.3	13,278	13.9	
Austria*	2010-2014	84,238	1,642	1.9	8,065	9.6	47,537	56.4	1,464	1.7	2,597	3.1	6,897	8.2	243	0.3	627	0.7	4,247	5.0	1,333	1.6	9,586	11.4	
	2000-2004	2,310	43	1.9	159	6.9	1,437	62.2	2	0.1	213	9.2	133	5.8	2	0.1	29	1.3	77	3.3	19	0.8	196	8.5	
	2005-2009	2,769	83	3.0	297	10.7	1,776	64.1	6	0.2	115	4.2	249	9.0	4	0.1	55	2.0	52	1.9	13	0.5	119	4.3	
Belgium*	2010-2014	2,479	53	2.1	178	7.2	1,736	70.0	-	-	117	4.7	208	8.4	1	0.0	24	1.0	50	2.0	5	0.2	107	4.3	
	2000-2004	733	17	2.3	111	15.1	385	52.5	21	2.9	6	0.8	100	13.6	3	0.4	8	1.1	19	2.6	18	2.5	45	6.1	
	2005-2009	3,815	114	3.0	494	12.9	2,290	60.0	121	3.2	13	0.3	394	10.3	27	0.7	28	0.7	65	1.7	101	2.6	168	4.4	
Croatia*	2010-2014	4,016	110	2.7	409	10.2	2,557	63.7	94	2.3	25	0.6	393	9.8	29	0.7	36	0.9	61	1.5	113	2.8	189	4.7	
	2000-2004	1,049	26	2.5	48	4.6	593	56.5	9	0.9	127	12.1	88	8.4	1	0.1	17	1.6	73	7.0	8	0.8	59	5.6	
	2005-2009	1,168	27	2.3	43	3.7	771	66.0	21	1.8	75	6.4	86	7.4	-	-	13	1.1	60	5.1	15	1.3	57	4.9	
Czech Republic*	2010-2014	1,046	20	1.9	31	3.0	743	71.0	23	2.2	72	6.9	76	7.3	2	0.2	8	0.8	45	4.3	23	2.2	3	0.3	
	2000-2004	2,532	50	2.0	561	22.2	1,352	53.4	64	2.5	81	3.2	229	9.0	4	0.2	23	0.9	91	3.6	13	0.5	64	2.5	
	2005-2009	2,711	44	1.6	449	16.6	1,540	56.8	75	2.8	67	2.5	236	8.7	-	-	39	1.4	111	4.1	28	1.0	122	4.5	
Denmark*	2010-2014	2,824	57	2.0	464	16.4	1,732	61.3	83	2.9	87	3.1	186	6.6	2	0.1	34	1.2	77	2.7	29	1.0	73	2.6	
	2000-2004	2,463	37	1.5	119	4.8	873	35.4	34	1.4	161	6.5	239	9.7	10	0.4	21	0.9	39	1.6	32	1.3	898	36.5	
	2005-2009	2,962	49	1.7	166	5.6	1,114	37.6	31	1.0	97	3.3	266	9.0	7	0.2	17	0.6	16	0.5	32	1.1	1,167	39.4	
Estonia*	2010-2014	3,186	28	0.9	148	4.6	1,355	42.5	30	0.9	72	2.3	164	5.1	12	0.4	18	0.6	25	0.8	16	0.5	1,318	41.4	
	2000-2004	316	3	0.9	72	22.8	191	60.4	11	3.5	4	1.3	23	7.3	2	0.6	4	1.3	1	0.3	4	1.3	1	0.3	
	2005-2009	329	8	2.4	70	21.3	180	54.7	12	3.6	5	1.5	40	12.2	2	0.6	3	0.9	4	1.2	3	0.9	2	0.6	
Finland*	2010-2014	202	2	1.0	34	16.8	124	61.4	3	1.5	3	1.5	21	10.4	2	1.0	7	3.5	-	-	5	2.5	1	0.5	
	2000-2004	1,317	29	2.2	133	10.1	629	47.8	64	4.9	145	11.0	201	15.3	1	0.1	14	1.1	30	2.3	52	3.9	19	1.4	
	2005-2009	1,505	54	3.6	114	7.6	759	50.4	50	3.3	164	10.9	252	16.7	-	-	16	1.1	34	2.3	55	3.7	7	0.5	
	2010-2014	1,658	54	3.3	94	5.7	894	53.9	59	3.6	128	7.7	276	16.6	1	0.1	14	0.8	59	3.6	65	3.9	14	0.8	

Country	Period of diagnosis	All tumour types combined		Ependymoma and choroid plexus tumour		Diffuse and anaplastic astrocytoma		Glioblastoma		Other specified astrocytoma		Unspecified astrocytoma		Oligodendroglial tumour		Medulloblastoma		Other and unspecified embryonal tumour		Unspecified glioma		Other specified neuro-epithelial tumour		Unspecified tumour	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
France	2000-2004	2,342		34	1.5	118	5.0	1,178	50.3	35	1.5	102	4.4	620	26.5	23	1.0	12	0.5	156	6.7	43	1.8	21	0.9
	2005-2009	3,049		70	2.3	104	3.4	1,790	58.7	41	1.3	46	1.5	741	24.3	35	1.1	13	0.4	140	4.6	61	2.0	8	0.3
	2010-2014	661		14	2.1	13	2.0	433	65.5	7	1.1	5	0.8	138	20.9	6	0.9	2	0.3	19	2.9	22	3.3	2	0.3
Germany	2000-2004	6,733		92	1.4	812	12.1	4,302	63.9	88	1.3	470	7.0	552	8.2	14	0.2	61	0.9	163	2.4	44	0.7	135	2.0
	2005-2009	9,547		129	1.4	1,150	12.0	6,480	67.9	119	1.2	554	5.8	630	6.6	17	0.2	65	0.7	151	1.6	72	0.8	180	1.9
	2010-2014	8,685		147	1.7	857	9.9	6,289	72.4	92	1.1	344	4.0	570	6.6	17	0.2	42	0.5	121	1.4	83	1.0	123	1.4
Gibraltar*	2000-2004	3		-	-	-	-	2	66.7	-	-	-	-	-	-	-	-	-	-	1	33.3	-	-	-	-
	2005-2009	7		-	-	1	14.3	4	57.1	-	-	1	14.3	-	-	-	-	-	-	1	14.3	-	-	-	-
Iceland*	2000-2004	106		1	0.9	8	7.5	49	46.2	9	8.5	7	6.6	6	5.7	-	-	-	-	4	3.8	1	0.9	21	19.8
	2005-2009	123		1	0.8	8	6.5	61	49.6	2	1.6	8	6.5	13	10.6	-	-	2	1.6	-	-	1	0.8	27	22.0
	2010-2014	106		1	0.9	7	6.6	52	49.1	2	1.9	15	14.2	4	3.8	1	0.9	-	-	2	1.9	-	-	22	20.8
Ireland*	2000-2004	947		12	1.3	135	14.3	507	53.5	30	3.2	91	9.6	101	10.7	1	0.1	16	1.7	19	2.0	11	1.2	24	2.5
	2005-2009	1,141		16	1.4	112	9.8	650	57.0	32	2.8	96	8.4	150	13.1	2	0.2	10	0.9	19	1.7	34	3.0	20	1.8
	2010-2014	1,049		22	2.1	92	8.8	594	56.6	30	2.9	64	6.1	183	17.4	1	0.1	5	0.5	12	1.1	28	2.7	18	1.7
Italy	2000-2004	9,016		138	1.5	693	7.7	3,076	34.1	63	0.7	232	2.6	457	5.1	41	0.5	34	0.4	642	7.1	43	0.5	3,597	39.9
	2005-2009	13,345		162	1.2	910	6.8	4,824	36.1	118	0.9	359	2.7	758	5.7	34	0.3	88	0.7	871	6.5	129	1.0	5,092	38.2
	2010-2014	5,195		96	1.8	391	7.5	1,844	35.5	68	1.3	102	2.0	292	5.6	22	0.4	36	0.7	329	6.3	74	1.4	1,941	37.4
Latvia*	2000-2004	721		7	1.0	89	12.3	114	15.8	-	-	79	11.0	22	3.1	4	0.6	7	1.0	38	5.3	9	1.2	352	48.8
	2005-2009	906		7	0.8	95	10.5	296	32.7	3	0.3	72	7.9	23	2.5	1	0.1	12	1.3	16	1.8	4	0.4	377	41.6
	2010-2014	889		14	1.6	46	5.2	292	32.8	-	-	68	7.6	33	3.7	-	-	8	0.9	12	1.3	3	0.3	413	46.5
Lithuania*	2000-2004	858		15	1.7	53	6.2	500	58.3	6	0.7	194	22.6	71	8.3	-	-	3	0.3	6	0.7	10	1.2	-	-
	2005-2009	938		18	1.9	75	8.0	633	67.5	6	0.6	118	12.6	66	7.0	-	-	3	0.3	9	1.0	7	0.7	3	0.3
	2010-2014	575		9	1.6	76	13.2	388	67.5	13	2.3	28	4.9	34	5.9	1	0.2	5	0.9	7	1.2	12	2.1	2	0.3
Malta*	2000-2004	104		2	1.9	15	14.4	30	28.8	4	3.8	4	3.8	2	1.9	1	1.0	-	-	7	6.7	1	1.0	38	36.5
	2005-2009	98		1	1.0	19	19.4	22	22.4	2	2.0	8	8.2	2	2.0	-	-	-	-	17	17.3	3	3.1	24	24.5
	2010-2014	106		3	2.8	25	23.6	42	39.6	1	0.9	7	6.6	4	3.8	-	-	-	-	8	7.5	-	-	16	15.1
Netherlands*	2000-2004	5,059		110	2.2	775	15.3	2,220	43.9	138	2.7	42	0.8	525	10.4	9	0.2	40	0.8	110	2.2	97	1.9	993	19.6
	2005-2009	5,737		108	1.9	698	12.2	2,925	51.0	125	2.2	37	0.6	581	10.1	13	0.2	51	0.9	89	1.6	135	2.4	975	17.0
	2010-2014	6,033		114	1.9	701	11.6	3,373	55.9	159	2.6	27	0.4	481	8.0	12	0.2	35	0.6	108	1.8	152	2.5	871	14.4
Norway*	2000-2004	1,579		37	2.3	162	10.3	808	51.2	45	2.8	59	3.7	202	12.8	2	0.1	12	0.8	84	5.3	40	2.5	128	8.1
	2005-2009	1,762		58	3.3	171	9.7	943	53.5	53	3.0	68	3.9	187	10.6	-	-	7	0.4	114	6.5	56	3.2	105	6.0
	2010-2014	1,920		61	3.2	218	11.4	1,083	56.4	59	3.1	46	2.4	185	9.6	1	0.1	15	0.8	83	4.3	46	2.4	123	6.4
Poland*	2000-2004	6,297		147	2.3	1,073	17.0	2,556	40.6	69	1.1	768	12.2	893	14.2	73	1.2	91	1.4	370	5.9	71	1.1	186	3.0
	2005-2009	8,068		192	2.4	1,317	16.3	4,060	50.3	117	1.5	535	6.6	1,052	13.0	109	1.4	92	1.1	384	4.8	40	0.5	170	2.1
	2010-2014	8,577		224	2.6	1,305	15.2	4,790	55.8	139	1.6	355	4.1	911	10.6	81	0.9	103	1.2	423	4.9	67	0.8	179	2.1
Portugal*	2000-2004	1,971		28	1.4	195	9.9	963	48.9	45	2.3	176	8.9	388	19.7	10	0.5	28	1.4	65	3.3	8	0.4	65	3.3
	2005-2009	2,841		32	1.1	230	8.1	1,472	51.8	33	1.2	158	5.6	619	21.8	24	0.8	28	1.0	69	2.4	32	1.1	144	5.1
	2010-2014	1,876		27	1.4	153	8.2	1,131	60.3	47	2.5	62	3.3	292	15.6	6	0.3	15	0.8	47	2.5	28	1.5	68	3.6
Romania	2005-2009	129		3	2.3	18	14.0	62	48.1	1	0.8	7	5.4	10	7.8	4	3.1	-	-	4	3.1	1	0.8	19	14.7
	2010-2014	150		5	3.3	21	14.0	72	48.0	3	2.0	8	5.3	17	11.3	1	0.7	-	-	1	0.7	3	2.0	19	12.7

Country	Period of diagnosis	All tumour types combined	Ependymoma and choroid plexus tumour		Diffuse and anaplastic astrocytoma		Glioblastoma		Other specified astrocytoma		Unspecified astrocytoma		Oligodendroglial tumour		Medulloblastoma		Other and unspecified embryonal tumour		Unspecified glioma		Other specified neuro-epithelial tumour		Unspecified tumour	
		No.	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Russian Federation	2000-2004	451	8	1.8	43	9.5	148	32.8	2	0.4	160	35.5	29	6.4	1	0.2	14	3.1	8	1.8	10	2.2	28	6.2
	2005-2009	1,048	15	1.4	165	15.7	292	27.9	42	4.0	280	26.7	64	6.1	1	0.1	18	1.7	48	4.6	10	1.0	113	10.8
	2010-2014	1,331	21	1.6	239	18.0	477	35.8	15	1.1	334	25.1	83	6.2	-	-	30	2.3	65	4.9	12	0.9	55	4.1
Slovakia*	2000-2004	1,299	37	2.8	317	24.4	427	32.9	53	4.1	27	2.1	85	6.5	13	1.0	21	1.6	21	1.6	8	0.6	290	22.3
	2005-2009	1,840	51	2.8	318	17.3	651	35.4	61	3.3	77	4.2	119	6.5	17	0.9	22	1.2	54	2.9	24	1.3	446	24.2
	2010-2014	408	9	2.2	81	19.9	170	41.7	2	0.5	13	3.2	16	3.9	3	0.7	8	2.0	11	2.7	1	0.2	94	23.0
Slovenia*	2000-2004	483	2	0.4	44	9.1	308	63.8	25	5.2	2	0.4	62	12.8	10	2.1	7	1.4	10	2.1	5	1.0	8	1.7
	2005-2009	540	6	1.1	64	11.9	370	68.5	17	3.1	2	0.4	45	8.3	4	0.7	7	1.3	17	3.1	8	1.5	-	-
	2010-2014	471	6	1.3	42	8.9	337	71.5	9	1.9	-	-	54	11.5	2	0.4	2	0.4	16	3.4	3	0.6	-	-
Spain	2000-2004	2,273	53	2.3	375	16.5	1,056	46.5	51	2.2	123	5.4	165	7.3	23	1.0	18	0.8	236	10.4	36	1.6	137	6.0
	2005-2009	2,641	61	2.3	440	16.7	1,258	47.6	58	2.2	100	3.8	208	7.9	22	0.8	34	1.3	261	9.9	50	1.9	149	5.6
	2010-2014	1,588	38	2.4	233	14.7	889	56.0	29	1.8	44	2.8	111	7.0	9	0.6	17	1.1	134	8.4	42	2.6	42	2.6
Sweden*	2000-2004	2,522	64	2.5	456	18.1	1,013	40.2	66	2.6	218	8.6	235	9.3	-	-	42	1.7	109	4.3	53	2.1	266	10.5
	2005-2009	2,966	64	2.2	222	7.5	1,501	50.6	48	1.6	249	8.4	333	11.2	-	-	44	1.5	69	2.3	53	1.8	383	12.9
	2010-2014	3,404	82	2.4	205	6.0	1,828	53.7	60	1.8	211	6.2	400	11.8	-	-	34	1.0	69	2.0	70	2.1	445	13.1
Switzerland	2000-2004	1,084	29	2.7	163	15.0	619	57.1	25	2.3	18	1.7	116	10.7	11	1.0	4	0.4	22	2.0	30	2.8	47	4.3
	2005-2009	1,303	40	3.1	153	11.7	787	60.4	27	2.1	20	1.5	132	10.1	16	1.2	14	1.1	17	1.3	34	2.6	63	4.8
	2010-2014	1,265	50	4.0	122	9.6	770	60.9	35	2.8	11	0.9	116	9.2	6	0.5	18	1.4	31	2.5	41	3.2	65	5.1
United Kingdom*	2000-2004	20,587	299	1.5	1,566	7.6	9,214	44.8	267	1.3	1,129	5.5	1,487	7.2	26	0.1	113	0.5	2,606	12.7	202	1.0	3,678	17.9
	2005-2009	22,152	334	1.5	1,648	7.4	11,463	51.7	320	1.4	554	2.5	1,634	7.4	25	0.1	114	0.5	2,464	11.1	258	1.2	3,338	15.1
	2010-2014	24,538	375	1.5	1,880	7.7	13,542	55.2	402	1.6	349	1.4	1,649	6.7	25	0.1	111	0.5	2,432	9.9	390	1.6	3,383	13.8
Oceania	2000-2004	7,602	114	1.5	830	10.9	4,343	57.1	72	0.9	375	4.9	807	10.6	11	0.1	53	0.7	398	5.2	47	0.6	552	7.3
	2005-2009	8,453	135	1.6	792	9.4	5,196	61.5	64	0.8	304	3.6	863	10.2	12	0.1	57	0.7	353	4.2	86	1.0	591	7.0
	2010-2014	8,281	134	1.6	741	8.9	5,359	64.7	76	0.9	190	2.3	800	9.7	23	0.3	46	0.6	322	3.9	104	1.3	486	5.9
Australia*	2000-2004	6,463	99	1.5	691	10.7	3,713	57.5	55	0.9	340	5.3	696	10.8	11	0.2	44	0.7	312	4.8	42	0.6	460	7.1
	2005-2009	7,277	124	1.7	655	9.0	4,450	61.2	61	0.8	292	4.0	755	10.4	11	0.2	47	0.6	303	4.2	82	1.1	497	6.8
	2010-2014	6,884	118	1.7	574	8.3	4,422	64.2	67	1.0	180	2.6	702	10.2	22	0.3	42	0.6	237	3.4	97	1.4	423	6.1
New Zealand*	2000-2004	1,139	15	1.3	139	12.2	630	55.3	17	1.5	35	3.1	111	9.7	-	-	9	0.8	86	7.6	5	0.4	92	8.1
	2005-2009	1,176	11	0.9	137	11.6	746	63.4	3	0.3	12	1.0	108	9.2	1	0.1	10	0.9	50	4.3	4	0.3	94	8.0
	2010-2014	1,397	16	1.1	167	12.0	937	67.1	9	0.6	10	0.7	98	7.0	1	0.1	4	0.3	85	6.1	7	0.5	63	4.5

\* Data with 100% coverage of the national population.

Supplementary Table 3. Histology groupings for brain tumours in children (0-14 years).

International Classification of Childhood Cancer Third Edition (ICCC-3)	WHO morphology definition and grade	ICD-O-3 morphology definition (sections 938-952)	ICD-O-3 morphology code		
Second Tier	Morphology groupings used in the study (adapted from ICCC-3)				
Ependymoma and choroid plexus tumour (IIIa)	Ependymoma	Subependymoma I Ependymoma II Papillary ependymoma Myxopapillary ependymoma I	9383/1 9391/3 9393/3 9394/1		
	Choroid plexus tumour	Choroid plexus papilloma I Atypical choroid plexus papilloma II Choroid plexus carcinoma III	9390/0 9390/1 9390/3		
Astrocytoma (IIIb)	Astrocytoma, WHO grade I and II	Subependymal giant cell astrocytoma I	9384/1		
		Diffuse astrocytoma II Protoplasmic astrocytoma Gemistocytic astrocytoma Fibrillary astrocytoma	9400/32 9410/3 9411/3 9420/3		
	Astrocytoma, WHO grade III and IV	Pilocytic astrocytoma I Piloxyoid astrocytoma II	9400/31 9421/1 9425/3		
		Pleomorphic xanthoastrocytoma II	9423/3 9424/3		
		Astrocytoma, anaplastic III	9400/33 9401/3		
		Glioblastoma IV Giant cell glioblastoma Gliosarcoma	9400/34 9440/3 9441/3 9442/3		
Unspecified astrocytoma	Astrocytoma NOS	9400/39			
Embryonal tumour (IIIc)	Medulloblastoma	Medulloblastoma IV Desmoplastic nodular medulloblastoma Medulloblastoma with extensive nodularity  Anaplastic medulloblastoma Large cell medulloblastoma	9470/3 9471/3 9471/3 9472/3 9474/3 9474/3 9480/3		
	Other and unspecified embryonal tumour	CNS primitive neuroectodermal tumour IV CNS neuroblastoma Ganglioneuroblastoma Medulloepithelioma Ependymblastoma	9364/3 9473/3 9500/3 9490/3 9501/3 9392/3		
Other glioma (III d)	Oligodendroglial tumour	Atypical teratoid / rhabdoid tumour IV	9508/3		
		Oligoastrocytoma II Anaplastic oligoastrocytoma III Oligodendrogloma II Oligodendrogloma, anaplastic III	9382/3 9382/3 9450/3 9451/3 9460/3		
	Unspecified glioma	Atypical teratoid / rhabdoid tumour	9508/3		
	Neuroepithelial glial tumour of uncertain origin	Gliomatosis cerebri Astroblastoma Chordoid glioma of the third ventricle II	9380/3 9381/3 9430/3 9444/1		
Other specified neoplasm (IIIe)	Neuronal and mixed neuronal-glial tumour	Paraganglioma	8680/1		
		Desmoplastic infantile astrocytoma / ganglioglioma	9412/1		
		Dysembryoblastic neuroepithelial tumour	9413/0		
		Angiocentric glioma I	9431/1 9442/1		
		Gangliocytoma I	9492/0		
		Dysplastic gangliocytoma of cerebellum	9493/0		
		Ganglioglioma I Anaplastic ganglioglioma III	9505/1 9505/3		
		Central neurocytoma II Extraventricular neurocytoma II Cerebellar liponeurocytoma II	9506/1 9506/1 9506/1		
		Papillary glioneuronal tumour I Rosette-forming glioneuronal tumour of the fourth ventricle I	9509/1 9509/1		
		Unspecified neoplasm (III f)	Unspecified neoplasm	Neoplasm, benign	8000/0
				Neoplasm, uncertain whether benign or malignant	8000/1
Neoplasm, malignant	8000/3				
Tumor cells, benign	8001/0				
Tumor cells, uncertain whether benign or malignant	8001/1				
Tumor cells, malignant	8001/3				
Malignant tumor, small cell type	8002/3				
Malignant tumor, giant cell type	8003/3				
Malignant tumor, spindle cell type	8004/3				
Clear cell tumor, NOS	8005/3				
Malignant tumor, clear cell type	8005/3				

WHO: World Health Organisation  
ICD-O-3: International Classification of Diseases for Oncology  
NOS: not otherwise specified

Supplementary Table 4. Histology groupings for brain tumours in adults (15-99 years).

Morphology groupings used in the study	WHO morphology definition and grade	ICD-O-3 morphology definition (sections 938-952)	ICD-O-3 morphology code
Ependymoma and choroid plexus tumour	Subependymoma I	Subependymoma	9383/1
	Ependymoma II	Ependymoma, NOS	9391/3
	Papillary ependymoma	Papillary ependymoma	9393/3
	Myxopapillary ependymoma I	Myxopapillary ependymoma	9394/1
	Choroid plexus papilloma I	Choroid plexus papilloma, NOS	9390/0
	Atypical choroid plexus papilloma II	Atypical choroid plexus papilloma	9390/1
	Choroid plexus carcinoma III	Choroid plexus carcinoma	9390/3
Diffuse and anaplastic astrocytoma	Diffuse astrocytoma II	Astrocytoma, NOS	9400/32
	Protoplasmic astrocytoma	Protoplasmic astrocytoma	9410/3
	Gemistocytic astrocytoma	Gemistocytic astrocytoma	9411/3
	Fibrillary astrocytoma	Fibrillary astrocytoma	9420/3
	Astrocytoma, anaplastic III	Astrocytoma, anaplastic	9400/33 9401/3
Glioblastoma	Glioblastoma IV	Astrocytoma, NOS	9400/34
	Giant cell glioblastoma	Glioblastoma, NOS	9440/3
	Gliosarcoma	Giant cell glioblastoma	9441/3
		Gliosarcoma	9442/3
Other specified astrocytoma	Subependymal giant cell astrocytoma I	Subependymal giant cell astrocytoma	9384/1
		Astrocytoma, NOS	9400/31
	Pilocytic astrocytoma I	Pilocytic astrocytoma	9421/1
	Pilomyxoid astrocytoma II	Pilomyxoid astrocytoma	9425/3
		Polar spongioblastoma	9423/3
		Pleomorphic xanthoastrocytoma II	Pleomorphic xanthoastrocytoma
Unspecified astrocytoma		Astrocytoma, NOS	9400/39
Oligodendroglial tumour	Oligoastrocytoma II	Mixed Glioma	9382/3
	Anaplastic oligoastrocytoma III	Mixed Glioma	9382/3
	Oligodendroglioma II	Oligodendroglioma, NOS	9450/3
	Oligodendroglioma, anaplastic III	Oligodendroglioma, anaplastic	9451/3
		Oligodendroblastoma (obs.)	9460/3
Medulloblastoma	Medulloblastoma IV	Medulloblastoma, NOS	9470/3
	Desmoplastic nodular medulloblastoma	Desmoplastic nodular medulloblastoma	9471/3
	Medulloblastoma with extensive nodularity		9471/3
		Medulloblastoma	9472/3
	Anaplastic medulloblastoma	Large cell medulloblastoma	9474/3
	Large cell medulloblastoma	Large cell medulloblastoma	9474/3
		Cerebellar sarcoma, NOS (obs.)	9480/3
Other and unspecified embryonal tumour	CNS primitive neuroectodermal tumour IV	Peripheral neuroectodermal tumour	9364/3
	CNS neuroblastoma	Primitive neuroectodermal tumour, NOS	9473/3
	Ganglioneuroblastoma	Neuroblastoma, NOS	9500/3
	Medulloepithelioma	Ganglioneuroblastoma	9490/3
	Ependymoblastoma	Medulloepithelioma, NOS	9501/3
		Ependymoma, anaplastic	9392/3
	Atypical teratoid / rhabdoid tumour IV	Atypical teratoid / rhabdoid tumour	9508/3
Unspecified glioma		Glioma, malignant	9380/3
Other specified neuroepithelial tumour	Paraganglioma	Paraganglioma, NOS	8680/1
	Gliomatosis cerebri	Gliomatosis cerebri	9381/3
	Desmoplastic infantile astrocytoma / ganglioglioma	Desmoplastic infantile astrocytoma	9412/1
	Dysembryoblastic neuroepithelial tumour	Dysembryoblastic neuroepithelial tumour	9413/0
	Astroblastoma	Astroblastoma	9430/3
	Angiocentric glioma I	Angiocentric glioma	9431/1
		Gliofibroma	9442/1
	Chordoid glioma of the third ventricle II	Chordoid glioma	9444/1
	Gangliocytoma I	Gangliocytoma	9492/0
	Dysplastic gangliocytoma of cerebellum	Dysplastic gangliocytoma of cerebellum	9493/0
	Ganglioglioma I	Ganglioglioma, NOS	9505/1
	Anaplastic ganglioglioma III	Ganglioglioma, anaplastic	9505/3
	Central neurocytoma II	Central neurocytoma	9506/1
	Extraventricular neurocytoma II	Central neurocytoma	9506/1
	Cerebellar liponeurocytoma II	Central neurocytoma	9506/1
	Papillary glioneuronal tumour I	Papillary glioneuronal tumour	9509/1
	Rosette-forming glioneuronal tumour of the fourth ventricle I	Papillary glioneuronal tumour	9509/1
Unspecified tumour		Neoplasm, benign	8000/0
		Neoplasm, uncertain whether benign or malignant	8000/1
		Neoplasm, malignant	8000/3
		Tumor cells, benign	8001/0
		Tumor cells, uncertain whether benign or malignant	8001/1
		Tumor cells, malignant	8001/3
		Malignant tumor, small cell type	8002/3
		Malignant tumor, giant cell type	8003/3
		Malignant tumor, spindle cell type	8004/3
		Clear cell tumor, NOS	8005/0
		Malignant tumor, clear cell type	8005/3

WHO: World Health Organisation  
 ICD-O-3: International Classification of Diseases for Oncology  
 NOS: not otherwise specified

Supplementary Table 5. Excluded ICD-O-3 codes, children (0-14 years).

Digits 1-4		ICD-O-3 codes				Total
		5th digit (behaviour)				
		0 (benign)	1 (uncertain whether benign or malignant)	3 (malignant)		
		No.	No.	No.	No.	
8010				Carcinoma, NOS	1	1
8041				Small cell carcinoma, NOS	1	1
8050	Papilloma, NOS	1				1
8123				Basaloid carcinoma	1	1
8140				Adenocarcinoma, NOS	1	1
8440	Cystadenoma, NOS	1				1
8720				Malignant melanoma, NOS	13	13
8800	Soft tissue tumor, benign	3	1	Sarcoma, NOS	36	40
8801				Spindle cell sarcoma	8	8
8802				Giant cell sarcoma	4	4
8803				Small cell sarcoma	1	1
8804				Epithelioid sarcoma	1	1
8805				Undifferentiated sarcoma	11	11
8806				Desmoplastic small round cell tumor	7	7
8810	Fibroma, NOS	1		Fibrosarcoma, NOS	12	13
8814				Infantile fibrosarcoma	1	1
8815	Solitary fibrous tumor	4				4
8823	Desmoplastic fibroma	1				1
8830				Malignant fibrous histiocytoma	1	1
8834				Giant cell fibroblastoma	1	1
8850	Lipoma, NOS	122	1	Atypical lipoma	1	123
8861	Angiolipoma, NOS	2				2
8890				Leiomyosarcoma, NOS	4	4
8900	Rhabdomyoma, NOS	2		Rhabdomyosarcoma, NOS	7	9
8910				Embryonal rhabdomyosarcoma, NOS	2	2
8912				Spindle cell rhabdomyosarcoma	1	1
8920				Alveolar rhabdomyosarcoma	1	1
8963				Malignant rhabdoid tumor	191	191
8990				Mesenchymoma, malignant	1	1
9040				Synovial sarcoma, NOS	2	2
9041				Synovial sarcoma, spindle cell	1	1
9043				Synovial sarcoma, biphasic	1	1
9060				Dysgerminoma	18	18
9061				Seminoma, NOS	2	2
9064				Germinoma	1,140	1,140
9065				Germ cell tumor, nonseminomatous	13	13
9070				Embryonal carcinoma, NOS	31	31
9071				Yolk sac tumour	42	42
9080	Teratoma, benign	78	52	Teratoma, malignant, NOS	217	347
9081				Teratocarcinoma	6	6
9082				Malignant teratoma, undifferentiated	5	5
9084	Dermoid cyst, NOS	219		Teratoma with malignant transformation	3	222
9085				Mixed germ cell tumour	215	215
9100				Choriocarcinoma, NOS	28	28
9101				Choriocarcinoma combined with other germ cell elements	13	13
9120	Hemangioma, NOS	171	1	Hemangiosarcoma	7	179
9121	Cavernous hemangioma	351				351
9122	Venous hemangioma	14				14
9123	Racemose hemangioma	10				10
9130	Hemangioendothelioma, benign	2	2			4
9131	Capillary hemangioma	30				30
9150	Hemangiopericytoma, benign	1	13	Hemangiopericytoma, malignant	16	30
9160	Angiofibroma, NOS	2				2
9161				Hemangioblastoma	119	119
9170	Lymphangioma, NOS	4				4
9173	Cystic lymphangioma	4		Lymphangiosarcoma	3	7
9231						4
9240				Myxoid chondrosarcoma	4	4
9350				Mesenchymal chondrosarcoma	8	8
9351					1	6
9362				Craniopharyngioma	5	2
9363				Craniopharyngioma, adamantinomatous	2	2
9370				Pineoblastoma	10	10
9371					1	1
9373				Chordoma, NOS	48	48
9490	Ganglioneuromatosis	31		Chondroid chordoma	2	2
9502					3	3
9503				Teratoid medulloepithelioma	13	13
9522				Neuroepithelioma, NOS	59	78
9530	Meningioma, NOS	2		Olfactory neuroblastoma	2	2
9539				Meningioma, malignant	7	9
9540	Neurofibroma, NOS	27	1			1
9549	Plexiform neurofibroma	11	417	Malignant peripheral nerve sheath tumor	23	467
9550	Neurilemoma, NOS	57	2			11
9561				Neurilemoma, malignant	7	66
9570	Neuroma, NOS	3		Malignant peripheral nerve sheath tumor with rhabdomyoblastic differentiation	3	3
9580	Granular cell tumor, NOS	1				3
9999		67	159	Granular cell tumor, malignant	2	3
					2,269	2,495

Combination of morphology code and behaviour as defined by the WHO Classification, for sites other than C71 (brain).

Combination of morphology code and behaviour not found in the WHO Classification, but for which an ICD-O-3 definition is available.

Combination of morphology code and behaviour not found in the WHO Classification, and for which an ICD-O-3 definition is not available.

Cases without a morphology code.

WHO: World Health Organisation  
 ICD-O-3: International Classification of Diseases for Oncology, third edition  
 NOS: not otherwise specified



Supplementary Table 6. Excluded ICD-O-3 codes, adults (15-99 years).

		ICD-O-3 codes				
Digits 1-4		5th digit (behaviour)			Total	
		0 (benign)	1 (uncertain whether benign or malignant)	3 (malignant)		
		No.	No.	No.		
8010	Epithelial tumor, benign	2		Carcinoma, NOS	97	99
8011	Epithelioma, benign	2		Epithelioma, malignant	3	5
8020				Carcinoma, undifferentiated, NOS	4	4
8021				Carcinoma, anaplastic, NOS	3	3
8031				Giant cell carcinoma	2	2
8033				Pseudosarcomatous carcinoma	1	1
8041				Small cell carcinoma, NOS	10	10
8050	Papilloma, NOS	8		Papillary carcinoma, NOS	2	10
8070				Squamous cell carcinoma in situ, NOS	13	13
8072				Squamous cell carcinoma, large cell, nonkeratinizing, NOS	1	1
8074				Squamous cell carcinoma, spindle cell	1	1
8083				Basaloid squamous cell carcinoma	1	1
8090				Basal cell carcinoma, NOS	2	2
8121	Schneiderian papilloma, NOS	1				1
8140	Adenoma, NOS	5		Adenocarcinoma, NOS	37	42
8200				Adenoid cystic carcinoma	4	4
8211				Tubular adenocarcinoma	1	1
8246				Neuroendocrine carcinoma, NOS	8	8
8260				Papillary adenocarcinoma, NOS	1	1
8272	Pituitary adenoma, NOS	9		Pituitary carcinoma, NOS	6	15
8310				Clear cell adenocarcinoma, NOS	1	1
8334	Macrofollicular adenoma	2				2
8380	Endometrioid adenoma, NOS	1				1
8381				Endometrioid adenofibroma, malignant	1	1
8400				Sweat gland adenocarcinoma	1	1
8430				Mucoepidermoid carcinoma	1	1
8440	Cystadenoma, NOS	3		Cystadenocarcinoma, NOS	5	8
8450				Papillary cystadenocarcinoma, NOS	1	1
8480				Mucinous adenocarcinoma	1	1
8560				Squamous cell and adenocarcinoma, mixed	1	1
8574				Adenocarcinoma with neuroendocrine differentiation	2	2
8630				Androblastoma, malignant	1	1
8690			Glomus jugulare tumor, NOS	1	1	
8693			Extra-adrenal paraganglioma, NOS	1	1	
8700				Pheochromocytoma, malignant	1	1
8711	Glomus tumor, NOS	3		Glomus tumor, malignant	2	5
8720				Malignant melanoma, NOS	179	179
8726	Magnocellular nevus	10				11
8728			Meningeal melanocytoma	2	2	4
8750	Intradermal nevus	2		Meningeal melanomatosis	2	2
8761						
8771				Malignant melanoma in giant pigmented nevus	1	1
8800	Soft tissue tumor, benign	12		Epithelioid cell melanoma	1	1
8801				Sarcoma, NOS	346	359
8802				Spindle cell sarcoma	66	66
8803				Giant cell sarcoma	21	21
8804				Small cell sarcoma	5	5
8805				Epithelioid sarcoma	8	8
8806				Undifferentiated sarcoma	18	18
8810	Fibroma, NOS	8		Desmoplastic small round cell tumor	15	15
8811	Fibromyxoma	1		Fibrosarcoma, NOS	36	44
8815	Solitary fibrous tumor	89		Fibromyxosarcoma	2	3
8821			Aggressive fibromatosis	8	1	9
8825			Myofibroblastic tumor, NOS	3	3	
8830						
8831	Histiocytoma, NOS	2		Malignant fibrous histiocytoma	9	9
8834			Giant cell fibroblastoma	1	1	
8836			Angiomatoid fibrous histiocytoma	3	3	
8850	Lipoma, NOS	446		Atypical lipoma	5	2
8851	Fibrolipoma	1		Liposarcoma, NOS	1	453
8852				Liposarcoma, well differentiated	1	2
8861	Angiolipoma, NOS	2		Myxoid liposarcoma	1	1
8890	Leiomyoma, NOS	4			1	3
8900			Leiomyomatosis, NOS	1	24	29
8910				Rhabdomyosarcoma, NOS	13	13
8940	Pleomorphic adenoma	1		Embryonal rhabdomyosarcoma, NOS	1	1
8963						
8980				Malignant rhabdoid tumor	29	29
8990				Carcinosarcoma, NOS	1	1
9040	Synovioma, benign	1		Mesenchymoma, malignant	1	1
9041				Synovial sarcoma, NOS	10	11
9044				Synovial sarcoma, spindle cell	6	6
9050				Clear cell sarcoma, NOS	4	4
9060				Mesothelioma, malignant	1	1
9061				Dysgerminoma	30	30
9064				Seminoma, NOS	1	1
9065				Germinoma	1,507	1,507
9070				Germ cell tumor, nonseminomatous	10	10
9071				Embryonal carcinoma, NOS	20	20
9080	Teratoma, benign	129	Teratoma, NOS	42	69	240
9081				Teratocarcinoma	15	15
9082				Malignant teratoma, undifferentiated	8	8

ICD-O-3 codes

Digits 1-4	5th digit (behaviour)				Total		
	0 (benign)		1 (uncertain whether benign or malignant)			3 (malignant)	
		No.		No.			No.
9083					Malignant teratoma, intermediate	2	2
9084	Dermoid cyst, NOS	632		4	Teratoma with malignant transformation	14	650
9085					Mixed germ cell tumour	112	112
9100					Choriocarcinoma, NOS	31	31
9101					Choriocarcinoma combined with other germ cell elements	10	10
9120	Hemangioma, NOS	2,716		6	Hemangiosarcoma	109	2,831
9121	Cavernous hemangioma	4,855		5		2	4,862
9122	Venous hemangioma	488					488
9123	Racemose hemangioma	51					51
9125	Epithelioid hemangioma	1					1
9130	Hemangioendothelioma, benign	6	Hemangioendothelioma, NOS	13	Hemangioendothelioma, malignant	24	43
9131	Capillary hemangioma	66				1	67
9133			Epithelioid hemangioendothelioma, NOS	10	Epithelioid hemangioendothelioma, malignant	12	22
9150	Hemangiopericytoma, benign	56	Hemangiopericytoma, NOS	563	Hemangiopericytoma, malignant	736	1,355
9160	Angiofibroma, NOS	3		1			4
9161	Acquired tufted hemangioma	77	Hemangioblastoma	7,954		90	8,121
9170	Lymphangioma, NOS	5			Lymphangiosarcoma	2	7
9171	Capillary lymphangioma	1					1
9172	Cavernous lymphangioma	4					4
9173	Cystic lymphangioma	65				1	66
9174			Lymphangiomyomatosis	1			1
9180	Osteoma, NOS	4			Osteosarcoma, NOS	1	5
9220	Chondroma, NOS	3			Chondrosarcoma, NOS	5	8
9231					Myxoid chondrosarcoma	13	13
9240					Mesenchymal chondrosarcoma	29	29
9251			Giant cell tumor of soft parts, NOS	2			2
9260					Ewing sarcoma	1	1
9350			Craniopharyngioma	23		1	24
9351			Craniopharyngioma, adamantinomatous	7			7
9352			Craniopharyngioma, papillary	3		1	4
9361			Pineocytoma	1			1
9362					Pineoblastoma	19	19
9370				2	Chordoma, NOS	776	778
9371					Chondroid chordoma	66	66
9372					Dedifferentiated chordoma	3	3
9373						1	1
9432			Pituicytoma	1			1
9490	Ganglioneuroma	86					86
9491	Ganglioneuromatosis	1					1
9503		34			Neuroepithelioma, NOS	118	152
9504					Spongioneuroblastoma	23	23
9520					Olfactory neurogenic tumor	2	2
9522					Olfactory neuroblastoma	156	156
9530	Meningioma, NOS	372	Meningiomatosis, NOS	11	Meningioma, malignant	239	622
9531	Meningothelial meningioma	144					144
9532	Fibrous meningioma	70				1	71
9533	Psammomatous meningioma	11					11
9534	Angiomatous meningioma	20				1	21
9535	Hemangioblastic meningioma	1					1
9537	Transitional meningioma	63				1	64
9538			Clear cell meningioma	3	Papillary meningioma	2	5
9539			Atypical meningioma	28	Meningeal sarcomatosis	7	35
9540	Neurofibroma, NOS	98	Neurofibromatosis, NOS	124	Malignant peripheral nerve sheath tumor	109	331
9550	Plexiform neurofibroma	10		1		1	12
9560	Neurilemoma, NOS	5,012	Neurinomatosis	59	Neurilemoma, malignant	350	5,421
9561					Malignant peripheral nerve sheath tumor w	13	13
9562	Neurothekeoma	5					5
9570	Neuroma, NOS	97				2	99
9571	Perineurioma, NOS	4			Perineurioma, malignant	1	5
9580	Granular cell tumor, NOS	17		1	Granular cell tumor, malignant	14	32
9581					Alveolar soft part sarcoma	2	2
9582	Granular cell tumor of the sellar region	1					1
9999		1,797		2,299		34,327	38,423

- Combination of morphology code and behaviour as defined by the WHO Classification, for sites other than C71 (brain).
- Combination of morphology code and behaviour not found in the WHO Classification, but for which an ICD-O-3 definition is available.
- Combination of morphology code and behaviour not found in the WHO Classification, and for which an ICD-O-3 definition is not available.
- Cases without a morphology code.

WHO: World Health Organisation  
 ICD-O-3: International Classification of Diseases for Oncology, third edition  
 NOS: not otherwise specified

**Supplementary Table 7. Frequency distribution of astrocytoma not otherwise specified (NOS) (ICD-O-3 9400/3) by grade, basis of diagnosis, and period of diagnosis, children (0-14 years).**

Country	Period of diagnosis	Astrocytoma, all combined		Astrocytoma NOS								
		No.	No.	%	grade (6th digit)					basis of diagnosis		
					grade 1	grade 2	grade 3	grade 4	Unknown	MV	not MV	Unknown
					%	%	%	%	%	%	%	%
Africa	2000-2004	11	7	63.6	-	14.3	-	71.4	14.3	100.0	-	-
	2005-2009	21	14	66.7	14.3	-	-	35.7	50.0	100.0	-	-
	2010-2014	14	6	42.9	-	-	-	-	100.0	100.0	-	-
Algeria	2000-2004	7	6	85.7	-	16.7	-	83.3	-	100.0	-	-
	2005-2009	16	12	75.0	16.7	-	-	41.7	41.7	100.0	-	-
	2010-2014	7	4	57.1	-	-	-	-	100.0	100.0	-	-
Mauritius*	2010-2014	2	2	100.0	-	-	-	-	100.0	100.0	-	-
Nigeria	2005-2009	4	1	25.0	-	-	-	-	100.0	100.0	-	-
South Africa	2000-2004	4	1	25.0	-	-	-	-	100.0	100.0	-	-
	2005-2009	1	1	100.0	-	-	-	-	100.0	100.0	-	-
America (Central and South)	2000-2004	374	132	35.3	0.8	2.3	-	-	97.0	99.2	0.8	-
	2005-2009	479	191	39.9	1.6	3.1	1.0	0.5	93.7	97.9	2.1	-
	2010-2014	415	182	43.9	1.6	1.1	0.5	0.5	96.2	98.4	1.6	-
Argentina	2000-2004	230	87	37.8	-	-	-	-	100.0	100.0	-	-
	2005-2009	292	129	44.2	-	-	-	-	100.0	100.0	-	-
	2010-2014	273	128	46.9	-	-	-	-	100.0	100.0	-	-
Brazil	2000-2004	37	15	40.5	-	-	-	-	100.0	100.0	-	-
	2005-2009	18	5	27.8	-	-	-	-	100.0	100.0	-	-
	2010-2014	8	2	25.0	-	-	-	-	100.0	100.0	-	-
Chile	2000-2004	2	1	50.0	-	-	-	-	100.0	100.0	-	-
	2005-2009	18	7	38.9	28.6	28.6	14.3	-	28.6	100.0	-	-
	2010-2014	5	1	20.0	100.0	-	-	-	-	100.0	-	-
Colombia	2000-2004	36	13	36.1	-	-	-	-	100.0	100.0	-	-
	2005-2009	27	8	29.6	-	-	-	-	100.0	87.5	12.5	-
	2010-2014	39	10	25.6	-	-	-	-	100.0	100.0	-	-
Costa Rica*	2000-2004	4	1	25.0	-	-	-	-	100.0	100.0	-	-
	2005-2009	10	4	40.0	-	-	-	-	100.0	100.0	-	-
	2010-2014	24	9	37.5	-	-	-	-	100.0	100.0	-	-
Ecuador	2000-2004	16	10	62.5	-	-	-	-	100.0	90.0	10.0	-
	2005-2009	55	29	52.7	-	-	-	3.4	96.6	89.7	10.3	-
	2010-2014	51	30	58.8	6.7	6.7	3.3	3.3	80.0	90.0	10.0	-
Guadeloupe	2010-2014	2	1	50.0	-	-	-	-	100.0	100.0	-	-
Puerto Rico*	2000-2004	47	5	10.6	20.0	60.0	-	-	20.0	100.0	-	-
	2005-2009	55	9	16.4	11.1	44.4	11.1	-	33.3	100.0	-	-
	2010-2014	12	1	8.3	-	-	-	-	100.0	100.0	-	-
America (North)	2000-2004	3,824	661	17.3	19.1	21.3	3.3	4.7	51.6	87.1	12.3	0.6
	2005-2009	3,874	590	15.2	14.6	20.5	2.2	3.2	59.5	85.3	13.7	1.0
	2010-2014	3,257	456	14.0	7.7	14.9	2.9	2.9	71.7	83.3	14.9	1.8
Canada	2000-2004	252	43	17.1	4.7	7.0	2.3	-	86.0	93.0	7.0	-
	2005-2009	264	49	18.6	-	4.1	-	-	95.9	81.6	16.3	2.0
	2010-2014	259	33	12.7	6.1	-	-	-	93.9	69.7	9.1	21.2
United States	2000-2004	3,572	618	17.3	20.1	22.3	3.4	5.0	49.2	86.7	12.6	0.6
	2005-2009	3,610	541	15.0	15.9	22.0	2.4	3.5	56.2	85.6	13.5	0.9
	2010-2014	2,998	423	14.1	7.8	16.1	3.1	3.1	70.0	84.4	15.4	0.2

Country	Period of diagnosis	Astrocytoma, all combined		Astrocytoma NOS								
		No.	No.	%	grade (6th digit)					basis of diagnosis		
					grade 1	grade 2	grade 3	grade 4	Unknown	MV	not MV	Unknown
					%	%	%	%	%	%	%	%
Asia	2000-2004	662	235	35.5	3.8	13.2	3.0	0.9	79.1	98.7	1.3	-
	2005-2009	799	279	34.9	5.7	14.0	5.0	1.1	74.2	96.8	3.2	-
	2010-2014	706	161	22.8	9.3	9.9	3.1	0.6	77.0	93.8	5.0	1.2
China	2000-2004	16	12	75.0	8.3	33.3	8.3	-	50.0	100.0	-	-
	2005-2009	39	21	53.8	9.5	4.8	-	4.8	81.0	100.0	-	-
	2010-2014	26	15	57.7	6.7	26.7	6.7	-	60.0	100.0	-	-
Cyprus*	2000-2004	1	1	100.0	-	-	-	-	100.0	-	100.0	-
	2005-2009	1	1	100.0	-	-	-	-	100.0	100.0	-	-
India	2000-2004	2	1	50.0	100.0	-	-	-	-	100.0	-	-
	2005-2009	4	3	75.0	-	-	-	-	100.0	66.7	33.3	-
	2010-2014	4	2	50.0	-	-	-	-	100.0	-	100.0	-
Israel*	2000-2004	112	11	9.8	27.3	9.1	-	-	63.6	100.0	-	-
	2005-2009	112	22	19.6	22.7	31.8	-	-	45.5	90.9	9.1	-
	2010-2014	86	10	11.6	20.0	10.0	10.0	-	60.0	60.0	20.0	20.0
Japan	2000-2004	87	31	35.6	-	3.2	3.2	-	93.5	100.0	-	-
	2005-2009	151	32	21.2	-	9.4	3.1	-	87.5	100.0	-	-
	2010-2014	105	18	17.1	-	-	-	-	100.0	100.0	-	-
Jordan	2000-2004	60	29	48.3	6.9	17.2	3.4	-	72.4	100.0	-	-
	2005-2009	59	25	42.4	12.0	4.0	20.0	4.0	60.0	100.0	-	-
	2010-2014	52	9	17.3	44.4	-	-	11.1	44.4	100.0	-	-
Korea*	2000-2004	138	49	35.5	-	-	-	-	100.0	95.9	4.1	-
	2005-2009	128	54	42.2	-	-	-	-	100.0	92.6	7.4	-
	2010-2014	127	39	30.7	-	-	-	-	100.0	92.3	7.7	-
Kuwait	2000-2004	5	1	20.0	-	-	-	-	100.0	100.0	-	-
	2005-2009	7	2	28.6	-	-	-	-	100.0	100.0	-	-
Malaysia	2010-2014	6	3	50.0	-	-	-	-	100.0	100.0	-	-
Qatar*	2000-2004	3	1	33.3	100.0	-	-	-	-	100.0	-	-
	2005-2009	6	4	66.7	-	25.0	25.0	-	50.0	75.0	25.0	-
Singapore*	2010-2014	32	5	15.6	-	-	-	-	100.0	100.0	-	-
Taiwan*	2000-2004	146	68	46.6	1.5	17.6	4.4	1.5	75.0	100.0	-	-
	2005-2009	98	48	49.0	2.1	35.4	2.1	2.1	58.3	100.0	-	-
	2010-2014	92	21	22.8	-	28.6	-	-	71.4	100.0	-	-
Thailand	2000-2004	37	22	59.5	-	4.5	-	4.5	90.9	100.0	-	-
	2005-2009	51	31	60.8	-	6.5	12.9	-	80.6	100.0	-	-
	2010-2014	26	13	50.0	7.7	7.7	-	-	84.6	100.0	-	-
Turkey	2000-2004	32	9	28.1	-	77.8	11.1	-	11.1	100.0	-	-
	2005-2009	123	36	29.3	13.9	19.4	5.6	-	61.1	97.2	2.8	-
	2010-2014	143	26	18.2	26.9	15.4	11.5	-	46.2	96.2	3.8	-
Europe	2000-2004	2,994	618	20.6	4.5	18.6	1.3	0.8	74.8	94.7	5.0	0.3
	2005-2009	3,153	514	16.3	8.2	19.8	1.9	0.2	69.8	95.3	4.5	0.2
	2010-2014	2,755	376	13.6	9.3	29.8	4.3	0.5	56.1	95.7	4.3	-
Belarus*	2000-2004	89	9	10.1	11.1	33.3	-	-	55.6	100.0	-	-
	2005-2009	73	7	9.6	14.3	42.9	-	-	42.9	100.0	-	-
	2010-2014	90	9	10.0	-	100.0	-	-	-	100.0	-	-

Country	Period of diagnosis	Astrocytoma, all combined		Astrocytoma NOS								
		No.	No.	%	grade (6th digit)					basis of diagnosis		
					grade 1	grade 2	grade 3	grade 4	Unknown	MV	not MV	Unknown
					%	%	%	%	%	%	%	%
Belgium*	2000-2004	27	4	14.8	-	100.0	-	-	-	100.0	-	-
	2005-2009	129	11	8.5	-	81.8	-	-	18.2	100.0	-	-
	2010-2014	154	16	10.4	6.3	50.0	6.3	-	37.5	100.0	-	-
Croatia*	2000-2004	33	18	54.5	-	-	-	-	100.0	94.4	5.6	-
	2005-2009	50	15	30.0	-	-	-	-	100.0	100.0	-	-
	2010-2014	28	8	28.6	-	-	-	-	100.0	100.0	-	-
Czech Republic*	2000-2004	67	13	19.4	15.4	7.7	7.7	7.7	61.5	100.0	-	-
	2005-2009	77	12	15.6	16.7	33.3	-	-	50.0	100.0	-	-
	2010-2014	72	13	18.1	53.8	30.8	7.7	-	7.7	100.0	-	-
Denmark*	2000-2004	64	13	20.3	-	-	-	-	100.0	92.3	7.7	-
	2005-2009	46	6	13.0	-	-	-	-	100.0	100.0	-	-
	2010-2014	31	2	6.5	-	-	-	-	100.0	100.0	-	-
Estonia*	2005-2009	14	1	7.1	-	-	-	-	100.0	100.0	-	-
	2010-2014	7	2	28.6	-	-	-	-	100.0	100.0	-	-
Finland*	2000-2004	85	7	8.2	-	-	-	-	100.0	100.0	-	-
	2005-2009	81	16	19.8	-	-	-	-	100.0	100.0	-	-
	2010-2014	86	9	10.5	-	-	-	-	100.0	100.0	-	-
France	2000-2004	558	58	10.4	-	100.0	-	-	-	84.5	13.8	1.7
	2005-2009	529	26	4.9	-	100.0	-	-	-	92.3	7.7	-
	2010-2014	364	20	5.5	15.0	70.0	15.0	-	-	95.0	5.0	-
Germany	2000-2004	63	20	31.7	15.0	5.0	-	-	80.0	100.0	-	-
	2005-2009	119	18	15.1	33.3	27.8	11.1	-	27.8	94.4	-	5.6
	2010-2014	81	16	19.8	25.0	31.3	18.8	-	25.0	93.8	6.3	-
Greece*	2010-2014	77	13	16.9	15.4	84.6	-	-	-	100.0	-	-
Iceland*	2000-2004	7	1	14.3	-	-	-	-	100.0	100.0	-	-
	2005-2009	8	2	25.0	-	-	-	-	100.0	100.0	-	-
Ireland*	2000-2004	64	17	26.6	-	-	-	-	100.0	100.0	-	-
	2005-2009	59	8	13.6	-	-	-	-	100.0	100.0	-	-
	2010-2014	52	4	7.7	-	-	-	-	100.0	100.0	-	-
Italy	2000-2004	185	42	22.7	4.8	7.1	-	2.4	85.7	92.9	7.1	-
	2005-2009	252	49	19.4	2.0	10.2	2.0	-	85.7	98.0	2.0	-
	2010-2014	105	23	21.9	4.3	8.7	4.3	-	82.6	100.0	-	-
Latvia*	2000-2004	32	25	78.1	-	-	-	-	100.0	100.0	-	-
	2005-2009	9	1	11.1	-	-	-	-	100.0	100.0	-	-
	2010-2014	30	10	33.3	-	-	-	-	100.0	100.0	-	-
Lithuania*	2000-2004	26	15	57.7	-	-	-	-	100.0	100.0	-	-
	2005-2009	14	7	50.0	-	14.3	-	-	85.7	100.0	-	-
Malta*	2005-2009	3	1	33.3	-	-	-	-	100.0	100.0	-	-
	2010-2014	3	3	100.0	-	-	-	-	100.0	100.0	-	-
Netherlands*	2000-2004	183	20	10.9	20.0	65.0	-	10.0	5.0	90.0	10.0	-
	2005-2009	176	14	8.0	-	85.7	7.1	-	7.1	85.7	14.3	-
	2010-2014	181	19	10.5	-	94.7	5.3	-	-	78.9	21.1	-

Country	Period of diagnosis	Astrocytoma, all combined		Astrocytoma NOS								
		No.	No.	%	grade (6th digit)					basis of diagnosis		
					grade 1	grade 2	grade 3	grade 4	Unknown	MV	not MV	Unknown
					%	%	%	%	%	%	%	%
<b>Norway*</b>	2000-2004	62	8	12.9	25.0	-	25.0	-	50.0	87.5	12.5	-
	2005-2009	67	13	19.4	15.4	7.7	-	-	76.9	100.0	-	-
	2010-2014	57	4	7.0	-	50.0	-	-	50.0	100.0	-	-
<b>Poland*</b>	2000-2004	235	95	40.4	2.1	2.1	-	-	95.8	100.0	-	-
	2005-2009	221	74	33.5	4.1	4.1	-	-	91.9	100.0	-	-
	2010-2014	124	32	25.8	-	9.4	-	-	90.6	100.0	-	-
<b>Portugal*</b>	2000-2004	73	23	31.5	-	13.0	-	-	87.0	100.0	-	-
	2005-2009	71	20	28.2	5.0	10.0	-	-	85.0	95.0	5.0	-
	2010-2014	65	11	16.9	36.4	9.1	-	-	54.5	100.0	-	-
<b>Romania</b>	2010-2014	2	1	50.0	-	100.0	-	-	-	100.0	-	-
<b>Russian Federation</b>	2000-2004	37	26	70.3	-	-	-	-	100.0	100.0	-	-
	2005-2009	42	25	59.5	4.0	-	-	-	96.0	100.0	-	-
	2010-2014	57	36	63.2	-	11.1	-	-	88.9	100.0	-	-
<b>Slovakia*</b>	2005-2009	67	8	11.9	12.5	50.0	25.0	-	12.5	100.0	-	-
	2010-2014	57	5	8.8	20.0	20.0	20.0	-	40.0	100.0	-	-
	2000-2004	18	1	5.6	-	-	-	-	100.0	100.0	-	-
<b>Slovenia*</b>	2000-2004	15	3	20.0	-	100.0	-	-	-	100.0	-	-
	2005-2009	22	1	4.5	-	100.0	-	-	-	100.0	-	-
	2010-2014	8	2	25.0	-	50.0	50.0	-	-	100.0	-	-
<b>Spain</b>	2000-2004	173	59	34.1	3.4	11.9	-	-	84.7	94.9	5.1	-
	2005-2009	201	50	24.9	8.0	16.0	-	-	76.0	96.0	4.0	-
	2010-2014	160	19	11.9	-	10.5	-	-	89.5	100.0	-	-
<b>Sweden*</b>	2000-2004	98	20	20.4	-	-	-	-	100.0	100.0	-	-
	2005-2009	99	27	27.3	-	-	-	-	100.0	100.0	-	-
	2010-2014	119	19	16.0	-	-	-	-	100.0	100.0	-	-
<b>Switzerland*</b>	2000-2004	84	7	8.3	14.3	42.9	-	-	42.9	100.0	-	-
	2005-2009	65	4	6.2	-	25.0	-	-	75.0	100.0	-	-
	2010-2014	85	5	5.9	-	60.0	-	-	40.0	100.0	-	-
<b>United Kingdom*</b>	2000-2004	638	107	16.8	7.5	9.3	2.8	0.9	79.4	87.9	11.2	0.9
	2005-2009	668	101	15.1	19.8	19.8	5.0	1.0	54.5	85.1	14.9	-
	2010-2014	690	79	11.4	16.5	30.4	6.3	2.5	44.3	87.3	12.7	-
<b>Oceania</b>	2000-2004	171	34	19.9	2.9	2.9	5.9	2.9	85.3	94.1	5.9	-
	2005-2009	162	27	16.7	7.4	37.0	3.7	3.7	48.1	88.9	11.1	-
	2010-2014	139	20	14.4	10.0	40.0	-	-	50.0	95.0	5.0	-
<b>Australia*</b>	2000-2004	140	31	22.1	3.2	3.2	6.5	3.2	83.9	93.5	6.5	-
	2005-2009	146	23	15.8	8.7	26.1	4.3	4.3	56.5	87.0	13.0	-
	2010-2014	129	18	14.0	11.1	38.9	-	-	50.0	94.4	5.6	-
<b>New Zealand*</b>	2000-2004	31	3	9.7	-	-	-	-	100.0	100.0	-	-
	2005-2009	16	4	25.0	-	100.0	-	-	-	100.0	-	-
	2010-2014	10	2	20.0	-	50.0	-	-	50.0	100.0	-	-

MV: microscopically verified.

\* Data with 100% coverage of the national population.

Supplementary Table 8. Frequency distribution of astrocytoma not otherwise specified (NOS) (ICD-O-3 9400/3) by grade, basis of diagnosis, and period of diagnosis, adults (15-99 years).

Country	Period of diagnosis	Astrocytoma, all combined		Astrocytoma NOS								
		No.	No.	%	grade (6th digit)					basis of diagnosis		
					grade 1	grade 2	grade 3	grade 4	Unknown	MV	not MV	Unknown
					%	%	%	%	%	%	%	%
Africa	2000-2004	26	8	30.8	-	12.5	-	62.5	25.0	100.0	-	-
	2005-2009	68	22	32.4	-	-	-	9.1	90.9	77.3	22.7	-
	2010-2014	132	24	18.2	-	-	-	29.2	70.8	100.0	-	-
Algeria	2000-2004	15	6	40.0	-	-	-	83.3	16.7	100.0	-	-
	2005-2009	46	18	39.1	-	-	-	11.1	88.9	88.9	11.1	-
	2010-2014	76	16	21.1	-	-	-	43.8	56.3	100.0	-	-
Mauritius*	2010-2014	24	6	25.0	-	-	-	-	100.0	100.0	-	-
Nigeria	2005-2009	20	4	20.0	-	-	-	-	100.0	25.0	75.0	-
	2010-2014	30	1	3.3	-	-	-	-	100.0	100.0	-	-
South Africa	2010-2014	2	1	50.0	-	-	-	-	100.0	100.0	-	-
Tunisia	2000-2004	10	2	20.0	-	50.0	-	-	50.0	100.0	-	-
America (Central and South)	2000-2004	1,297	382	29.5	2.4	3.4	2.6	2.1	89.5	97.6	2.4	-
	2005-2009	2,174	607	27.9	1.8	4.6	1.8	2.0	89.8	97.4	2.6	-
	2010-2014	1,648	439	26.6	2.1	6.6	5.9	2.5	82.9	96.1	3.9	-
Argentina	2000-2004	68	23	33.8	-	-	-	-	100.0	100.0	-	-
	2005-2009	321	98	30.5	5.1	1.0	-	5.1	88.8	100.0	-	-
	2010-2014	270	71	26.3	5.6	2.8	2.8	2.8	85.9	100.0	-	-
Brazil	2000-2004	249	62	24.9	-	-	-	-	100.0	98.4	1.6	-
	2005-2009	356	80	22.5	-	-	-	-	100.0	98.8	1.3	-
	2010-2014	217	38	17.5	-	-	-	-	100.0	94.7	5.3	-
Chile	2000-2004	16	3	18.8	-	-	-	-	100.0	100.0	-	-
	2005-2009	114	17	14.9	5.9	23.5	11.8	-	58.8	100.0	-	-
	2010-2014	56	10	17.9	10.0	10.0	20.0	-	60.0	100.0	-	-
Colombia	2000-2004	239	53	22.2	1.9	-	-	-	98.1	98.1	1.9	-
	2005-2009	290	60	20.7	-	-	1.7	-	98.3	98.3	1.7	-
	2010-2014	254	41	16.1	-	-	-	4.9	95.1	100.0	-	-
Costa Rica*	2000-2004	154	64	41.6	-	-	-	-	100.0	100.0	-	-
	2005-2009	229	105	45.9	-	-	-	-	100.0	100.0	-	-
	2010-2014	246	64	26.0	-	-	-	-	100.0	100.0	-	-
Ecuador	2000-2004	182	104	57.1	-	-	-	-	100.0	97.1	2.9	-
	2005-2009	356	181	50.8	-	1.1	-	-	98.9	93.9	6.1	-
	2010-2014	384	202	52.6	1.5	12.4	9.9	1.5	74.8	93.1	6.9	-
Martinique	2000-2004	35	14	40.0	-	-	-	-	100.0	100.0	-	-
	2005-2009	36	1	2.8	-	-	-	-	100.0	100.0	-	-
Puerto Rico*	2000-2004	354	59	16.7	13.6	22.0	16.9	13.6	33.9	93.2	6.8	-
	2005-2009	462	65	14.1	7.7	32.3	12.3	10.8	36.9	95.4	4.6	-
	2010-2014	160	13	8.1	7.7	7.7	15.4	30.8	38.5	92.3	7.7	-
America (North)	2000-2004	58,186	6,308	10.8	8.5	25.4	14.1	20.3	31.8	90.3	8.6	1.1
	2005-2009	63,993	5,797	9.1	7.3	18.8	10.6	15.4	48.0	89.6	9.4	1.1
	2010-2014	54,718	4,011	7.3	4.3	14.8	5.7	10.2	64.9	91.1	8.1	0.9
Canada	2000-2004	6,502	1,287	19.8	0.5	3.9	8.4	41.5	45.7	88.0	11.3	0.7
	2005-2009	7,214	1,020	14.1	0.3	3.0	6.2	31.3	59.2	85.6	13.2	1.2
	2010-2014	6,692	429	6.4	0.2	3.0	1.4	12.1	83.2	86.2	8.4	5.4
United States	2000-2004	51,684	5,021	9.7	10.5	30.9	15.6	14.9	28.2	90.9	7.9	1.2
	2005-2009	56,779	4,777	8.4	8.8	22.1	11.5	12.0	45.6	90.4	8.5	1.0
	2010-2014	48,026	3,582	7.5	4.8	16.2	6.2	10.0	62.8	91.7	8.0	0.3
Asia	2000-2004	8,169	1,757	21.5	3.0	10.5	8.1	2.6	75.9	99.3	0.7	-
	2005-2009	13,320	2,422	18.2	2.6	14.8	7.0	3.1	72.5	98.0	1.9	0.1
	2010-2014	13,562	1,668	12.3	2.5	15.3	6.3	2.9	72.9	94.9	5.1	-

Country	Period of diagnosis	grade (6th digit)								basis of diagnosis		
		No.	No.	%	grade	grade	grade	grade	Unknown	MV	not MV	Unknown
					1	2	3	4				
					%	%	%	%	%	%	%	%
China	2000-2004	269	154	57.2	1.3	3.2	7.1	1.9	86.4	100.0	-	-
	2005-2009	815	368	45.2	1.6	6.0	7.9	1.9	82.6	100.0	-	-
	2010-2014	803	259	32.3	6.6	16.6	11.2	1.2	64.5	100.0	-	-
Cyprus*	2000-2004	18	6	33.3	-	33.3	16.7	-	50.0	100.0	-	-
	2005-2009	142	31	21.8	9.7	41.9	29.0	3.2	16.1	96.8	3.2	-
	2010-2014	162	21	13.0	-	19.0	42.9	19.0	19.0	95.2	4.8	-
India	2000-2004	16	7	43.8	-	42.9	42.9	-	14.3	100.0	-	-
	2005-2009	46	10	21.7	-	10.0	10.0	-	80.0	100.0	-	-
	2010-2014	37	10	27.0	10.0	-	20.0	10.0	60.0	100.0	-	-
Israel*	2000-2004	1,143	138	12.1	10.1	19.6	26.1	13.0	31.2	97.8	2.2	-
	2005-2009	1,244	116	9.3	7.8	27.6	29.3	12.9	22.4	97.4	1.7	0.9
	2010-2014	1,074	84	7.8	4.8	35.7	17.9	8.3	33.3	90.5	9.5	-
Japan	2000-2004	1,587	267	16.8	1.5	5.2	2.2	0.4	90.6	100.0	-	-
	2005-2009	3,160	433	13.7	0.7	9.2	5.5	1.8	82.7	99.8	-	0.2
	2010-2014	2,335	240	10.3	0.4	7.9	5.4	0.4	85.8	100.0	-	-
Jordan*	2000-2004	332	109	32.8	12.8	15.6	25.7	4.6	41.3	100.0	-	-
	2005-2009	359	61	17.0	6.6	19.7	16.4	19.7	37.7	100.0	-	-
	2010-2014	341	31	9.1	6.5	22.6	12.9	16.1	41.9	100.0	-	-
Korea*	2000-2004	2,225	358	16.1	-	-	-	-	100.0	98.3	1.7	-
	2005-2009	2,957	423	14.3	-	-	-	-	100.0	91.5	8.5	-
	2010-2014	3,836	416	10.8	-	-	-	-	100.0	83.2	16.8	-
Kuwait*	2000-2004	45	13	28.9	-	30.8	15.4	23.1	30.8	92.3	7.7	-
	2005-2009	57	9	15.8	-	-	11.1	11.1	77.8	77.8	22.2	-
	2010-2014	57	8	14.0	-	12.5	-	-	87.5	100.0	-	-
Malaysia	2005-2009	34	17	50.0	-	-	-	-	100.0	100.0	-	-
	2010-2014	39	15	38.5	-	-	-	-	100.0	100.0	-	-
Qatar*	2000-2004	27	12	44.4	8.3	25.0	16.7	25.0	25.0	100.0	-	-
	2005-2009	56	13	23.2	7.7	38.5	38.5	7.7	7.7	92.3	7.7	-
	2010-2014	74	18	24.3	5.6	66.7	16.7	5.6	5.6	100.0	-	-
Singapore*	2000-2004	163	15	9.2	-	20.0	-	-	80.0	100.0	-	-
	2005-2009	219	20	9.1	-	35.0	30.0	-	35.0	100.0	-	-
	2010-2014	281	25	8.9	-	8.0	8.0	-	84.0	92.0	8.0	-
Taiwan*	2000-2004	1,594	423	26.5	2.4	18.4	7.3	2.4	69.5	100.0	-	-
	2005-2009	1,712	342	20.0	2.6	33.0	6.7	6.1	51.5	100.0	-	-
	2010-2014	2,000	245	12.3	2.4	19.6	2.9	7.3	67.8	100.0	-	-
Thailand	2000-2004	370	198	53.5	2.0	3.5	3.5	-	90.9	100.0	-	-
	2005-2009	566	324	57.2	4.9	7.7	1.9	0.3	85.2	100.0	-	-
	2010-2014	353	82	23.2	4.9	24.4	8.5	1.2	61.0	100.0	-	-
Turkey	2000-2004	380	57	15.0	5.3	36.8	26.3	3.5	28.1	96.5	3.5	-
	2005-2009	1,953	255	13.1	5.1	34.9	8.6	2.7	48.6	98.4	1.6	-
	2010-2014	2,170	214	9.9	2.8	32.7	6.5	3.7	54.2	98.1	1.9	-
Europe	2000-2004	48,709	7,514	15.4	1.7	14.6	9.6	12.5	61.7	94.4	4.4	1.2
	2005-2009	63,952	6,479	10.1	2.9	23.6	8.7	4.9	60.0	94.8	4.0	1.2
	2010-2014	59,669	4,802	8.0	2.1	33.9	7.4	2.5	54.1	94.5	4.5	1.0
Austria*	2000-2004	1,811	231	12.8	-	3.5	4.3	-	92.2	98.7	-	1.3
	2005-2009	2,194	161	7.3	-	19.3	8.7	0.6	71.4	82.6	-	17.4
	2010-2014	2,031	168	8.3	-	17.9	9.5	3.0	69.6	88.1	0.6	11.3
Belgium*	2000-2004	523	24	4.6	-	70.8	-	4.2	25.0	100.0	-	-
	2005-2009	2,918	138	4.7	-	90.6	-	-	9.4	100.0	-	-
	2010-2014	3,086	138	4.5	2.2	78.3	1.4	-	18.1	100.0	-	-
Croatia*	2000-2004	777	127	16.3	-	-	-	-	100.0	91.3	8.7	-
	2005-2009	910	75	8.2	-	-	-	-	100.0	92.0	8.0	-
	2010-2014	869	72	8.3	-	-	-	-	100.0	91.7	8.3	-
Czech Republic*	2000-2004	2,058	199	9.7	3.5	37.2	17.1	1.5	40.7	100.0	-	-



Country	Period of diagnosis	grade (6th digit)								basis of diagnosis		
		No.	No.	%	grade	grade	grade	grade	Unknown	MV	not MV	Unknown
					1	2	3	4				
					%	%	%	%	%	%	%	%
	2005-2009	2,132	173	8.1	16.8	32.9	9.8	1.7	38.7	100.0	-	-
	2010-2014	2,368	220	9.3	12.3	35.5	10.0	2.7	39.5	100.0	-	-
<b>Denmark*</b>	2000-2004	1,187	161	13.6	-	-	-	-	100.0	95.7	4.3	-
	2005-2009	1,408	97	6.9	-	-	-	-	100.0	96.9	3.1	-
	2010-2014	1,605	72	4.5	-	-	-	-	100.0	91.7	8.3	-
<b>Estonia*</b>	2000-2004	278	4	1.4	-	-	-	-	100.0	100.0	-	-
	2005-2009	267	5	1.9	-	-	-	-	100.0	100.0	-	-
	2010-2014	164	3	1.8	-	-	-	-	100.0	100.0	-	-
<b>Finland*</b>	2000-2004	971	145	14.9	-	-	-	-	100.0	100.0	-	-
	2005-2009	1,087	164	15.1	-	-	-	-	100.0	100.0	-	-
	2010-2014	1,175	128	10.9	-	-	-	-	100.0	100.0	-	-
<b>France</b>	2000-2004	1,433	102	7.1	-	-	-	-	100.0	100.0	-	-
	2005-2009	1,981	46	2.3	-	-	-	-	100.0	100.0	-	-
	2010-2014	458	5	1.1	-	-	-	-	100.0	100.0	-	-
<b>Germany</b>	2000-2004	5,672	652	11.5	0.8	17.3	7.2	2.6	72.1	94.0	3.2	2.8
	2005-2009	8,303	723	8.7	0.6	15.9	6.4	0.6	76.6	92.4	3.0	4.6
	2010-2014	7,582	436	5.8	0.5	14.4	3.9	2.3	78.9	95.4	1.1	3.4
<b>Gibraltar*</b>	2005-2009	6	1	16.7	-	-	-	-	100.0	-	100.0	-
<b>Iceland*</b>	2000-2004	73	7	9.6	-	-	-	-	100.0	100.0	-	-
	2005-2009	79	8	10.1	-	-	-	-	100.0	100.0	-	-
	2010-2014	76	15	19.7	-	-	-	-	100.0	100.0	-	-
<b>Ireland*</b>	2000-2004	763	91	11.9	-	-	-	-	100.0	100.0	-	-
	2005-2009	890	96	10.8	-	-	-	-	100.0	99.0	-	1.0
	2010-2014	780	64	8.2	-	-	-	-	100.0	100.0	-	-
<b>Italy</b>	2000-2004	4,064	326	8.0	4.3	12.0	11.0	1.5	71.2	94.5	5.5	-
	2005-2009	6,211	552	8.9	2.2	17.0	11.4	4.3	65.0	94.7	5.3	-
	2010-2014	2,406	202	8.4	1.5	22.3	21.3	4.5	50.5	94.6	5.4	-
<b>Latvia*</b>	2000-2004	282	79	28.0	-	-	-	-	100.0	100.0	-	-
	2005-2009	466	72	15.5	-	-	-	-	100.0	100.0	-	-
	2010-2014	406	68	16.7	-	-	-	-	100.0	100.0	-	-
<b>Lithuania*</b>	2000-2004	753	196	26.0	-	0.5	0.5	-	99.0	100.0	-	-
	2005-2009	832	136	16.3	-	8.1	5.1	-	86.8	100.0	-	-
	2010-2014	505	33	6.5	3.0	9.1	-	3.0	84.8	100.0	-	-
<b>Malta*</b>	2000-2004	53	10	18.9	10.0	40.0	10.0	-	40.0	100.0	-	-
	2005-2009	51	13	25.5	-	38.5	-	-	61.5	92.3	7.7	-
	2010-2014	75	9	12.0	-	22.2	-	-	77.8	77.8	22.2	-
<b>Netherlands*</b>	2000-2004	3,175	1,027	32.3	3.1	27.9	15.9	49.0	4.1	95.4	4.6	-
	2005-2009	3,785	555	14.7	2.3	53.3	14.2	23.4	6.7	92.4	7.6	-
	2010-2014	4,260	457	10.7	1.5	77.9	8.3	6.3	5.9	90.6	9.4	-
<b>Norway*</b>	2000-2004	1,074	96	8.9	5.2	21.9	7.3	4.2	61.5	93.8	6.3	-
	2005-2009	1,235	92	7.4	12.0	10.9	3.3	-	73.9	85.9	14.1	-
	2010-2014	1,406	96	6.8	-	45.8	6.3	-	47.9	93.8	6.3	-
<b>Poland*</b>	2000-2004	4,466	798	17.9	0.6	2.1	1.0	-	96.2	100.0	-	-
	2005-2009	6,029	631	10.5	0.8	10.1	4.0	0.3	84.8	100.0	-	-
	2010-2014	6,589	529	8.0	1.7	21.7	8.7	0.8	67.1	100.0	-	-
<b>Portugal*</b>	2000-2004	1,379	223	16.2	2.7	8.1	4.9	5.4	78.9	100.0	-	-
	2005-2009	1,893	216	11.4	1.9	15.3	3.2	6.5	73.1	100.0	-	-
	2010-2014	1,393	108	7.8	5.6	21.3	10.2	5.6	57.4	94.4	-	5.6
<b>Romania</b>	2005-2009	88	9	10.2	-	-	22.2	-	77.8	100.0	-	-
	2010-2014	104	10	9.6	-	20.0	-	-	80.0	100.0	-	-
<b>Russian Federation</b>	2000-2004	353	160	45.3	-	-	-	-	100.0	98.1	1.3	0.6
	2005-2009	779	355	45.6	11.5	9.6	-	-	78.9	99.4	0.3	0.3
	2010-2014	1,065	390	36.6	2.3	6.2	5.9	-	85.6	100.0	-	-
<b>Slovakia*</b>	2005-2009	824	149	18.1	1.3	30.2	40.3	10.1	18.1	100.0	-	-
	2010-2014	1,107	175	15.8	7.4	21.7	20.0	6.9	44.0	100.0	-	-

Country	Period of diagnosis	grade (6th digit)								basis of diagnosis		
		No.	No.	%	grade	grade	grade	grade	Unknown	MV	not MV	Unknown
					1	2	3	4				
	2000-2004	266	17	6.4	5.9	17.6	-	-	76.5	100.0	-	-
Slovenia*	2000-2004	379	13	3.4	23.1	23.1	23.1	15.4	15.4	100.0	-	-
	2005-2009	453	16	3.5	12.5	75.0	-	-	12.5	100.0	-	-
	2010-2014	388	21	5.4	14.3	66.7	19.0	-	-	100.0	-	-
Spain	2000-2004	1,605	304	18.9	2.6	20.7	25.7	10.5	40.5	99.3	0.7	-
	2005-2009	1,856	251	13.5	4.4	34.7	15.9	5.2	39.8	98.0	1.6	0.4
	2010-2014	1,195	132	11.0	2.3	51.5	11.4	1.5	33.3	97.7	2.3	-
Sweden*	2000-2004	1,753	218	12.4	-	-	-	-	100.0	99.5	0.5	-
	2005-2009	2,020	249	12.3	-	-	-	-	100.0	99.2	0.8	-
	2010-2014	2,304	211	9.2	-	-	-	-	100.0	97.2	2.8	-
Switzerland	2000-2004	825	59	7.2	6.8	20.3	32.2	10.2	30.5	94.9	5.1	-
	2005-2009	987	63	6.4	1.6	36.5	25.4	4.8	31.7	92.1	7.9	-
	2010-2014	938	39	4.2	-	56.4	10.3	5.1	28.2	97.4	2.6	-
United Kingdom*	2000-2004	12,176	2,113	17.4	1.5	17.7	11.5	15.9	53.4	86.7	10.1	3.2
	2005-2009	13,985	1,407	10.1	2.9	34.9	15.0	7.8	39.4	90.0	9.0	1.0
	2010-2014	16,175	1,159	7.2	2.3	54.4	9.2	4.0	30.1	88.6	10.7	0.7
Oceania	2000-2004	5,620	587	10.4	2.9	12.6	11.9	8.7	63.9	91.5	8.2	0.3
	2005-2009	6,356	523	8.2	1.3	25.2	9.4	5.9	58.1	89.5	10.5	-
	2010-2014	6,366	408	6.4	1.5	33.8	9.3	8.8	46.6	90.4	9.6	-
Australia*	2000-2004	4,799	490	10.2	2.9	8.8	12.0	6.9	69.4	92.2	7.3	0.4
	2005-2009	5,458	452	8.3	1.5	19.7	8.0	6.2	64.6	90.0	10.0	-
	2010-2014	5,243	329	6.3	1.5	24.6	8.5	10.6	54.7	90.0	10.0	-
New Zealand*	2000-2004	821	97	11.8	3.1	32.0	11.3	17.5	36.1	87.6	12.4	-
	2005-2009	898	71	7.9	-	60.6	18.3	4.2	16.9	85.9	14.1	-
	2010-2014	1,123	79	7.0	1.3	72.2	12.7	1.3	12.7	92.4	7.6	-

MV: microscopically verified.

\* Data with 100% coverage of the national population.

Supplementary Table 9. Basis of diagnosis by histology group and country, children (0-14 years of age).

Country	Period of diagnosis	Ependy-moma		Choroid plexus tumour		Astrocytoma WHO grade I and II		Astrocytoma WHO grade III and IV		Unspecified astrocytoma		Medullo-blastoma		Other and unspecified embryonal tumour		Oligodendro-glial tumour		Unspecified glioma		Neuro-epithelial glial tumour of uncertain origin		Neuronal and mixed neuronal-glial tumour		Unspecified neoplasm		
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Africa	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	12.5	-	-	-	-	11	23.4
	MV	6	100.0	-	-	13	100.0	19	100.0	14	100.0	16	100.0	35	97.2	2	100.0	7	87.5	-	-	-	-	35	74.5	
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	1	2.8	-	-	-	-	-	-	-	-	-	1	2.1
Algeria	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2.8
	MV	2	100.0	-	-	4	100.0	17	100.0	9	100.0	4	100.0	16	94.1	2	100.0	6	100.0	-	-	-	-	34	94.4	
	Unknown	-	-	-	-	-	-	-	-	-	-	-	1	5.9	-	-	-	-	-	-	-	-	-	-	1	2.8
Mauritius*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MV	-	-	-	-	-	-	-	-	2	100.0	1	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nigeria	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	100.0
	MV	3	100.0	-	-	8	100.0	-	-	1	100.0	9	100.0	13	100.0	-	-	1	100.0	-	-	-	-	-	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
South Africa	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	100.0	-	-	-	-	5	83.3	
	MV	1	100.0	-	-	1	100.0	2	100.0	2	100.0	2	100.0	6	100.0	-	-	-	-	-	-	-	-	1	16.7	
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
America (Central and South)	Not MV	-	-	-	-	-	-	5	1.9	8	1.7	3	0.3	-	-	-	-	23	15.3	-	-	-	-	429	75.1	
	MV	304	100.0	91	100.0	522	99.8	257	98.1	474	98.3	917	99.6	317	100.0	100	99.0	127	84.7	9	100.0	88	100.0	142	24.9	
	Unknown	-	-	-	-	1	0.2	-	-	-	-	1	0.1	-	-	1	1.0	-	-	-	-	-	-	-	-	-
Argentina	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1.0	-	-	-	-	314	74.1	
	MV	198	100.0	73	100.0	299	100.0	151	100.0	344	100.0	651	100.0	214	100.0	74	100.0	101	99.0	5	100.0	76	100.0	110	25.9	
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brazil	Not MV	-	-	-	-	-	-	-	-	-	-	1	2.0	-	-	-	-	5	38.5	-	-	-	-	13	65.0	
	MV	16	100.0	6	100.0	20	100.0	21	100.0	22	100.0	50	98.0	11	100.0	2	100.0	8	61.5	-	-	1	100.0	7	35.0	
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chile	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	33.3	-	-	-	-	11	100.0	
	MV	11	100.0	2	100.0	14	100.0	8	100.0	3	100.0	14	100.0	7	100.0	1	100.0	2	66.7	-	-	1	100.0	-	-	
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Colombia	Not MV	-	-	-	-	-	-	2	6.5	1	3.2	-	-	-	-	-	-	5	45.5	-	-	-	-	26	89.7	
	MV	14	100.0	2	100.0	40	100.0	29	93.5	30	96.8	38	100.0	27	100.0	10	100.0	6	54.5	1	100.0	3	100.0	3	10.3	
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Costa Rica*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27	75.0	
	MV	23	100.0	1	100.0	16	100.0	8	100.0	14	100.0	35	100.0	13	100.0	2	100.0	2	100.0	-	-	-	-	9	25.0	
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ecuador	Not MV	-	-	-	-	-	-	3	10.7	7	11.3	1	1.1	-	-	-	-	9	69.2	-	-	-	-	36	87.8	
	MV	27	100.0	-	-	32	100.0	25	89.3	55	88.7	88	98.9	16	100.0	7	100.0	4	30.8	2	100.0	-	-	5	12.2	
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Guadeloupe	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MV	1	100.0	-	-	1	100.0	1	100.0	1	100.0	4	100.0	2	100.0	-	-	-	-	-	-	-	3	100.0	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Supplementary Table 9. Basis of diagnosis by histology group and country, children (0-14 years of age).

Country	Period of diagnosis	Ependy-moma		Choroid plexus tumour		Astrocytoma WHO grade I and II		Astrocytoma WHO grade III and IV		Unspecified astrocytoma		Medullo-blastoma		Other and unspecified embryonal tumour		Oligodendro-glial tumour		Unspecified glioma		Neuro-epithelial glial tumour of uncertain origin		Neuronal and mixed neuronal-glial tumour		Unspecified neoplasm	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Martinique*	Not MV	-	-	-	-	-	-	-	-	-	-	1	16.7	-	-	-	-	-	-	-	-	-	-	-	-
	MV	2	100.0	-	-	5	83.3	-	-	-	-	4	66.7	1	100.0	-	-	-	-	-	-	1	100.0	-	-
	Unknown	-	-	-	-	1	16.7	-	-	-	-	1	16.7	-	-	1	100.0	-	-	-	-	-	-	-	-
Puerto Rico*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	33.3	-	-	-	-	-	2	20.0
	MV	12	100.0	7	100.0	95	100.0	14	100.0	5	100.0	33	100.0	26	100.0	4	100.0	4	66.7	1	100.0	3	100.0	8	80.0
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
America (North)	Not MV	25	2.1	29	4.2	314	3.8	40	2.4	187	18.4	19	0.7	21	0.8	12	2.0	2,734	72.8	13	13.3	82	4.4	452	48.9
	MV	1,139	96.9	661	95.0	7,873	95.6	1,644	96.9	816	80.1	2,853	98.8	2,648	98.4	580	97.6	958	25.5	84	85.7	1,778	94.3	252	27.2
	Unknown	11	0.9	6	0.9	46	0.6	13	0.8	16	1.6	17	0.6	23	0.9	2	0.3	65	1.7	1	1.0	25	1.3	221	23.9
Canada	Not MV	-	-	1	2.7	13	2.4	2	1.9	14	12.2	3	1.1	3	1.3	4	10.3	176	69.8	-	-	9	7.6	41	20.3
	MV	82	91.1	30	81.1	504	91.6	100	92.6	95	82.6	257	95.5	229	95.4	34	87.2	53	21.0	11	100.0	88	73.9	14	6.9
	Unknown	8	8.9	6	16.2	33	6.0	6	5.6	6	5.2	9	3.3	8	3.3	1	2.6	23	9.1	-	-	22	18.5	147	72.8
United States	Not MV	25	2.3	28	4.2	301	3.9	38	2.4	173	19.1	16	0.6	18	0.7	8	1.4	2,558	73.0	13	14.9	73	4.1	411	56.8
	MV	1,057	97.4	631	95.8	7,369	95.9	1,544	97.2	721	79.8	2,596	99.1	2,419	98.7	546	98.4	905	25.8	73	83.9	1,690	95.7	238	32.9
	Unknown	3	0.3	-	-	13	0.2	7	0.4	10	1.1	8	0.3	15	0.6	1	0.2	42	1.2	1	1.1	3	0.2	74	10.2
Asia	Not MV	5	1.3	-	-	7	0.8	7	1.0	19	3.7	7	0.5	16	1.6	1	0.5	419	46.2	3	6.0	1	0.6	750	84.8
	MV	395	98.8	122	100.0	911	99.2	725	99.0	496	95.9	1,547	99.5	961	98.3	186	99.5	485	53.5	47	94.0	153	99.4	120	13.6
	Unknown	-	-	-	-	-	-	-	-	2	0.4	-	-	1	0.1	-	-	3	0.3	-	-	-	-	14	1.6
China	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3.0	1	12.5	-	-	226	90.8	
	MV	15	100.0	7	100.0	26	100.0	23	100.0	32	100.0	58	100.0	22	100.0	9	100.0	32	97.0	7	87.5	8	100.0	23	9.2
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyprus*	Not MV	-	-	-	-	-	-	-	-	1	50.0	-	-	-	-	-	-	3	60.0	-	-	-	-	1	50.0
	MV	1	100.0	1	100.0	-	-	-	-	1	50.0	2	100.0	-	-	1	100.0	2	40.0	-	-	-	-	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	50.0
India	Not MV	-	-	-	-	-	-	-	-	3	60.0	-	-	-	-	-	-	1	16.7	-	-	-	-	5	100.0
	MV	1	100.0	-	-	2	100.0	3	100.0	2	40.0	2	100.0	-	-	1	100.0	5	83.3	-	-	-	-	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Israel*	Not MV	2	4.1	-	-	3	1.3	1	1.9	4	17.4	2	1.4	4	4.9	-	-	28	23.3	-	-	-	-	28	77.8
	MV	47	95.9	19	100.0	231	98.7	52	98.1	17	73.9	137	98.6	78	95.1	18	100.0	92	76.7	3	100.0	48	100.0	8	22.2
	Unknown	-	-	-	-	-	-	-	-	2	8.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Japan	Not MV	-	-	-	-	2	1.3	-	-	-	-	-	-	-	-	-	100	60.2	-	-	1	3.0	124	80.5	
	MV	53	100.0	33	100.0	151	98.7	115	100.0	75	100.0	195	100.0	131	99.2	15	100.0	64	38.6	9	100.0	32	97.0	19	12.3
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	1	0.8	-	-	2	1.2	-	-	-	-	11	7.1
Jordan*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	48.1	-	-	-	-	8	38.1	
	MV	28	100.0	6	100.0	59	100.0	72	100.0	40	100.0	129	100.0	52	100.0	11	100.0	27	51.9	2	100.0	3	100.0	13	61.9
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Korea*	Not MV	2	1.7	-	-	-	-	5	2.5	9	6.3	5	1.0	10	2.8	-	-	192	76.5	-	-	-	-	257	93.8
	MV	115	98.3	26	100.0	47	100.0	199	97.5	133	93.7	503	99.0	343	97.2	55	100.0	59	23.5	17	100.0	7	100.0	17	6.2
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Supplementary Table 9. Basis of diagnosis by histology group and country, children (0-14 years of age).

Country	Period of diagnosis	Ependy-moma		Choroid plexus tumour		Astrocytoma WHO grade I and II		Astrocytoma WHO grade III and IV		Unspecified astrocytoma		Medullo-blastoma		Other and unspecified embryonal tumour		Oligodendro-glial tumour		Unspecified glioma		Neuro-epithelial glial tumour of uncertain origin		Neuronal and mixed neuronal-glial tumour		Unspecified neoplasm	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Kuwait*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	60.0	-	-	-	-	-	-
	MV	5	100.0	-	-	5	100.0	5	100.0	3	100.0	14	100.0	2	100.0	1	100.0	4	40.0	1	100.0	2	100.0	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Malaysia	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	40.0	-	-	-	-	-	-
	MV	3	100.0	-	-	1	100.0	4	100.0	3	100.0	10	100.0	10	100.0	3	100.0	3	60.0	1	100.0	-	-	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Qatar*	Not MV	-	-	-	-	-	-	-	-	1	50.0	-	-	-	-	-	-	-	-	-	-	-	-	2	50.0
	MV	-	-	-	-	8	100.0	5	100.0	1	50.0	4	100.0	4	100.0	-	-	4	100.0	-	-	-	-	2	50.0
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Singapore*	Not MV	-	-	-	-	1	2.0	-	-	-	-	-	-	1	5.3	-	-	4	21.1	-	-	-	-	3	60.0
	MV	11	100.0	4	100.0	48	98.0	19	100.0	5	100.0	21	100.0	18	94.7	2	100.0	15	78.9	-	-	9	100.0	2	40.0
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Taiwan*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MV	41	100.0	5	100.0	124	100.0	118	100.0	94	100.0	241	100.0	147	100.0	37	100.0	33	100.0	4	100.0	7	100.0	2	100.0
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thailand	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	1	3.1	-	-	5	15.2	-	-	-	-	59	100.0
	MV	11	100.0	1	100.0	15	100.0	43	100.0	56	100.0	90	100.0	31	96.9	5	100.0	28	84.8	-	-	-	-	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Turkey	Not MV	1	1.5	-	-	1	0.5	1	1.5	1	2.9	-	-	-	-	1	3.4	52	30.6	2	40.0	-	-	37	50.7
	MV	64	98.5	20	100.0	194	99.5	67	98.5	34	97.1	141	100.0	123	100.0	28	96.6	117	68.8	3	60.0	37	100.0	34	46.6
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.6	-	-	-	-	2	2.7
Europe	Not MV	17	1.6	11	1.6	101	1.6	19	1.2	43	4.2	23	0.6	19	0.8	8	1.0	952	58.8	7	6.8	84	5.2	780	66.2
	MV	1,035	98.1	669	98.2	6,194	98.3	1,544	98.7	987	95.6	3,886	99.4	2,280	99.0	770	99.0	639	39.5	95	92.2	1,537	94.7	346	29.4
	Unknown	3	0.3	1	0.1	7	0.1	1	0.1	2	0.2	2	0.1	3	0.1	-	-	27	1.7	1	1.0	2	0.1	52	4.4
Belarus*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	35.7	-	-	-	-	36	85.7
	MV	47	100.0	11	100.0	211	100.0	33	100.0	8	100.0	92	100.0	51	100.0	44	100.0	9	64.3	1	100.0	25	100.0	6	14.3
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Belgium*	Not MV	-	-	-	-	1	0.4	-	-	-	-	-	-	-	-	-	-	63	95.5	-	-	-	-	21	87.5
	MV	19	100.0	43	100.0	243	99.6	58	100.0	8	100.0	110	100.0	74	100.0	28	100.0	3	4.5	5	100.0	56	100.0	3	12.5
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Croatia*	Not MV	1	5.3	-	-	2	4.2	-	-	1	2.4	6	10.2	3	8.3	-	-	2	7.4	-	-	-	-	1	3.3
	MV	18	94.7	1	100.0	46	95.8	22	100.0	40	97.6	53	89.8	33	91.7	5	100.0	25	92.6	-	-	11	100.0	29	96.7
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Czech Republic*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MV	25	100.0	11	100.0	156	100.0	45	100.0	15	100.0	31	100.0	64	100.0	11	100.0	9	100.0	1	100.0	12	100.0	16	100.0
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Denmark*	Not MV	-	-	-	-	6	5.9	1	5.3	1	4.8	-	-	1	2.2	-	-	1	10.0	-	-	-	-	56	34.6
	MV	11	100.0	8	100.0	95	94.1	18	94.7	20	95.2	70	100.0	45	97.8	9	100.0	9	90.0	2	100.0	20	100.0	105	64.8
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.6

Supplementary Table 9. Basis of diagnosis by histology group and country, children (0-14 years of age).

Country	Period of diagnosis	Ependy-moma		Choroid plexus tumour		Astrocytoma WHO grade I and II		Astrocytoma WHO grade III and IV		Unspecified astrocytoma		Medullo-blastoma		Other and unspecified embryonal tumour		Oligodendro-glial tumour		Unspecified glioma		Neuro-epithelial glial tumour of uncertain origin		Neuronal and mixed neuronal-glial tumour		Unspecified neoplasm	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Estonia*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MV	6	100.0	5	100.0	40	100.0	2	100.0	3	100.0	14	100.0	11	100.0	4	100.0	-	-	-	-	2	100.0	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Finland*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MV	21	100.0	19	100.0	189	100.0	31	100.0	32	100.0	56	100.0	57	100.0	11	100.0	2	100.0	4	100.0	57	100.0	4	100.0
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
France	Not MV	2	1.2	6	3.9	31	2.4	4	2.4	-	-	5	0.6	3	0.7	6	2.1	242	57.9	1	7.1	46	8.2	50	70.4
	MV	171	98.8	148	96.1	1,249	97.4	165	97.6	-	-	775	99.2	411	99.3	285	97.9	160	38.3	13	92.9	512	91.6	16	22.5
	Unknown	-	-	-	-	2	0.2	-	-	-	-	1	0.1	-	-	-	-	16	3.8	-	-	1	0.2	5	7.0
Germany	Not MV	1	5.3	-	-	2	1.3	-	-	1	4.0	1	0.8	1	1.0	-	-	35	66.0	1	50.0	-	-	1	12.5
	MV	18	94.7	15	100.0	153	97.5	81	100.0	23	92.0	122	99.2	103	99.0	13	100.0	17	32.1	1	50.0	22	100.0	7	87.5
	Unknown	-	-	-	-	2	1.3	-	-	1	4.0	-	-	-	-	-	-	1	1.9	-	-	-	-	-	-
Greece*	Not MV	-	-	-	-	2	3.0	1	9.1	-	-	-	-	-	-	-	-	17	94.4	1	100.0	1	5.6	2	100.0
	MV	5	100.0	6	85.7	64	97.0	10	90.9	-	-	57	100.0	35	100.0	6	100.0	1	5.6	-	-	16	88.9	-	-
	Unknown	-	-	1	14.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	5.6	-	-
Iceland*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	66.7	-	-	-	-	4	100.0
	MV	-	-	-	-	14	100.0	1	100.0	3	100.0	2	100.0	1	100.0	2	100.0	1	33.3	-	-	2	100.0	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ireland*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MV	15	100.0	8	100.0	126	100.0	20	100.0	29	100.0	24	100.0	52	98.1	14	100.0	6	100.0	2	100.0	19	100.0	1	50.0
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	1	1.9	-	-	-	-	-	-	-	-	1	50.0
Italy	Not MV	5	5.4	-	-	5	1.5	1	1.0	4	4.1	2	0.8	1	1.0	-	-	53	55.2	1	14.3	2	2.2	269	93.1
	MV	88	94.6	34	100.0	338	98.5	100	99.0	93	95.9	259	99.2	100	99.0	26	100.0	43	44.8	6	85.7	90	97.8	20	6.9
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Latvia*	Not MV	-	-	-	-	-	-	1	4.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	87.5
	MV	3	100.0	-	-	12	100.0	22	95.7	36	100.0	11	100.0	5	100.0	2	100.0	3	100.0	2	100.0	-	-	1	3.1
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	9.4
Lithuania*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MV	8	100.0	1	100.0	14	100.0	11	100.0	21	100.0	28	100.0	7	100.0	5	100.0	6	100.0	1	100.0	2	100.0	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Malta*	Not MV	-	-	-	-	1	20.0	-	-	-	-	-	-	-	-	-	-	3	100.0	-	-	-	-	-	-
	MV	2	100.0	-	-	4	80.0	2	100.0	4	100.0	5	100.0	1	100.0	-	-	-	-	-	-	2	100.0	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	98.0
Netherlands*	Not MV	-	-	1	2.6	17	3.9	4	3.9	-	-	-	-	-	-	-	-	119	81.5	-	-	7	5.6	1	2.0
	MV	59	100.0	38	97.4	418	96.1	98	96.1	2	100.0	237	100.0	151	100.0	36	100.0	27	18.5	6	100.0	117	94.4	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	35.3
Norway*	Not MV	-	-	1	4.3	-	-	-	-	1	6.3	-	-	-	-	-	-	24	63.2	-	-	4	8.2	22	64.7
	MV	11	100.0	22	95.7	142	100.0	28	100.0	15	93.8	42	100.0	54	100.0	17	100.0	14	36.8	1	100.0	45	91.8	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Supplementary Table 9. Basis of diagnosis by histology group and country, children (0-14 years of age).

Country	Period of diagnosis	Ependy-moma		Choroid plexus tumour		Astrocytoma WHO grade I and II		Astrocytoma WHO grade III and IV		Unspecified astrocytoma		Medullo-blastoma		Other and unspecified embryonal tumour		Oligodendro-glial tumour		Unspecified glioma		Neuro-epithelial glial tumour of uncertain origin		Neuronal and mixed neuronal-glial tumour		Unspecified neoplasm	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Poland*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	100.0
	MV	120	100.0	31	100.0	214	100.0	178	100.0	188	100.0	453	100.0	226	100.0	66	100.0	57	100.0	9	100.0	5	100.0	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	61.5
Portugal*	Not MV	-	-	-	-	-	-	-	-	1	2.3	-	-	-	-	-	-	17	42.5	-	-	-	-	5	38.5
	MV	20	100.0	15	100.0	128	100.0	38	100.0	42	97.7	102	100.0	49	98.0	25	100.0	22	55.0	3	100.0	23	100.0	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	1	2.0	-	-	1	2.5	-	-	-	-	2	100.0
Romania	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	1	50.0	-	-	2	50.0	-	-	-	-	-	-
	MV	2	100.0	-	-	3	100.0	-	-	-	-	4	100.0	1	50.0	2	100.0	2	50.0	-	-	-	-	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Russian Federation	Not MV	-	-	-	-	-	-	-	-	-	-	1	1.7	-	-	-	-	1	7.1	-	-	-	-	13	100.0
	MV	10	100.0	3	100.0	12	100.0	42	100.0	82	100.0	58	98.3	25	100.0	16	100.0	13	92.9	4	100.0	-	-	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	100.0
Slovakia*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MV	22	100.0	7	100.0	118	100.0	20	100.0	4	100.0	55	100.0	25	100.0	13	100.0	7	100.0	1	100.0	6	100.0	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Slovenia*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MV	-	-	4	100.0	30	100.0	15	100.0	-	-	29	100.0	14	100.0	3	100.0	3	100.0	1	100.0	4	100.0	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	58.8
Spain	Not MV	1	1.0	1	2.6	3	0.8	-	-	4	3.8	2	0.7	-	-	-	-	42	56.0	1	20.0	1	1.4	14	41.2
	MV	95	99.0	38	97.4	359	99.2	67	100.0	101	96.2	288	99.3	161	100.0	15	100.0	33	44.0	4	80.0	72	98.6	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	54	84.4
Sweden*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	8.3	-	-	-	-	10	15.6
	MV	32	100.0	23	100.0	202	100.0	48	100.0	66	100.0	83	100.0	80	100.0	23	100.0	11	91.7	2	100.0	56	100.0	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Switzerland*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	50.0
	MV	9	100.0	14	100.0	187	100.0	39	100.0	8	100.0	85	100.0	74	100.0	9	100.0	4	100.0	2	100.0	38	100.0	1	50.0
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	56.2
United Kingdom*	Not MV	7	3.4	2	1.2	31	2.1	7	2.0	30	17.1	6	0.8	9	2.4	2	2.4	323	66.7	2	7.4	23	6.6	68	27.3
	MV	198	95.2	164	98.8	1,427	97.7	350	97.8	144	82.3	741	99.1	370	97.4	80	97.6	152	31.4	24	88.9	323	93.4	41	16.5
	Unknown	3	1.4	-	-	3	0.2	1	0.3	1	0.6	1	0.1	1	0.3	-	-	9	1.9	1	3.7	-	-	-	-
Oceania	Not MV	4	3.9	2	5.7	14	5.7	13	7.4	6	11.5	11	3.9	9	3.8	-	-	163	75.5	-	-	11	16.2	94	74.0
	MV	99	96.1	33	94.3	230	94.3	163	92.6	46	88.5	273	96.1	225	96.2	51	100.0	52	24.1	3	100.0	57	83.8	13	10.2
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.5	-	-	-	-	20	15.7
Australia*	Not MV	4	4.8	2	6.5	14	6.4	13	8.7	6	12.5	11	4.5	9	4.3	-	-	129	75.4	-	-	11	16.4	78	71.6
	MV	80	95.2	29	93.5	204	93.6	136	91.3	42	87.5	233	95.5	201	95.7	42	100.0	41	24.0	3	100.0	56	83.6	11	10.1
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.6	-	-	-	-	20	18.3
New Zealand*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34	75.6	-	-	-	-	16	88.9
	MV	19	100.0	4	100.0	26	100.0	27	100.0	4	100.0	40	100.0	24	100.0	9	100.0	11	24.4	-	-	1	100.0	2	11.1
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

MV: microscopically verified.

\* Data with 100% coverage of the national population.  
Supplementary Table 9

Supplementary Table 10. Basis of diagnosis by histology group and country, adults (15-99 years of age).

Country	Basis of diagnosis	Ependymoma and choroid plexus tumour		Diffuse and anaplastic astrocytoma		Glioblastoma		Other specified astrocytoma		Unspecified astrocytoma		Oligodendroglial tumour		Medulloblastoma		Other and unspecified embryonal tumour		Unspecified glioma		Other specified neuroepithelial tumour		Unspecified tumour	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Africa	Not MV	-	-	-	-	5	3.0	-	-	3	7.7	1	11.1	-	-	-	-	4	16.0	-	-	92	30.8
	MV	13	100.0	14	100.0	163	97.0	5	100.0	36	92.3	8	88.9	2	100.0	10	100.0	21	84.0	1	100.0	195	65.2
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12
Algeria	Not MV	-	-	-	-	2	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	3.4
	MV	8	100.0	3	100.0	106	98.1	-	-	26	100.0	7	100.0	1	100.0	2	100.0	17	100.0	-	-	186	90.7
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12
Mauritius*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	80.0
	MV	1	100.0	1	100.0	17	100.0	-	-	6	100.0	-	-	-	-	-	-	1	100.0	-	-	2	20.0
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nigeria	Not MV	-	-	-	-	3	9.1	-	-	3	60.0	1	50.0	-	-	-	-	3	60.0	-	-	69	90.8
	MV	3	100.0	7	100.0	30	90.9	5	100.0	2	40.0	1	50.0	1	100.0	6	100.0	2	40.0	1	100.0	7	9.2
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
South Africa	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	50.0	-	-	7	100.0
	MV	1	100.0	1	100.0	3	100.0	-	-	1	100.0	-	-	-	-	1	100.0	1	50.0	-	-	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
America (Central and South)	Not MV	2	1.2	6	0.7	66	2.3	3	2.4	38	3.0	1	0.1	-	-	1	1.1	66	21.9	-	-	1,155	76.2
	MV	168	98.2	901	99.3	2,767	97.6	122	97.6	1,213	97.0	738	99.6	90	100.0	86	98.9	235	78.1	60	98.4	334	22.0
	Unknown	1	0.6	-	-	3	0.1	-	-	-	-	2	0.3	-	-	-	-	-	-	1	1.6	27	1.8
Argentina	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	95	43.6
	MV	24	96.0	118	100.0	350	99.2	17	100.0	171	100.0	97	100.0	3	100.0	19	100.0	57	100.0	6	85.7	109	50.0
	Unknown	1	4.0	-	-	3	0.8	-	-	-	-	-	-	-	-	-	-	-	-	1	14.3	14	6.4
Brazil	Not MV	-	-	1	0.8	6	1.2	-	-	4	2.2	-	-	-	-	1	10.0	5	9.1	-	-	113	77.9
	MV	29	100.0	128	99.2	501	98.8	6	100.0	176	97.8	70	97.2	6	100.0	9	90.0	50	90.9	2	100.0	27	18.6
	Unknown	-	-	-	-	-	-	-	-	-	-	2	2.8	-	-	-	-	-	-	-	-	5	3.4
Chile	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	132	97.8
	MV	7	100.0	48	100.0	112	100.0	7	100.0	19	100.0	28	100.0	10	100.0	5	100.0	10	100.0	3	100.0	3	2.2
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Colombia	Not MV	-	-	-	-	11	2.4	-	-	2	1.3	-	-	-	-	-	-	7	12.7	-	-	346	81.6
	MV	38	100.0	156	100.0	448	97.6	18	100.0	148	98.7	129	100.0	12	100.0	23	100.0	48	87.3	10	100.0	78	18.4
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Costa Rica*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	5.3	-	-	166	85.1
	MV	19	100.0	60	100.0	333	100.0	3	100.0	233	100.0	182	100.0	7	100.0	5	100.0	18	94.7	4	100.0	29	14.9
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ecuador	Not MV	2	10.0	1	0.5	20	7.8	1	8.3	27	6.2	1	0.8	-	-	-	-	29	55.8	-	-	231	92.8
	MV	18	90.0	218	99.5	237	92.2	11	91.7	407	93.8	121	99.2	46	100.0	7	100.0	23	44.2	5	100.0	18	7.2
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Supplementary Table 10. Basis of diagnosis by histology group and country, adults (15-99 years of age).

Country	Basis of diagnosis	Ependymoma and choroid plexus tumour		Diffuse and anaplastic astrocytoma		Glioblastoma		Other specified astrocytoma		Unspecified astrocytoma		Oligodendroglial tumour		Medulloblastoma		Other and unspecified embryonal tumour		Unspecified glioma		Other specified neuroepithelial tumour		Unspecified tumour	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Guadeloupe	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	33.3	-	-	-	-
	MV	1	100.0	-	-	38	100.0	-	-	-	-	3	100.0	-	-	1	100.0	2	66.7	8	100.0	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Martinique*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MV	2	100.0	5	100.0	82	100.0	2	100.0	15	100.0	10	100.0	3	100.0	-	-	4	100.0	8	100.0	4	100.0
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Puerto Rico*	Not MV	-	-	4	2.3	29	4.2	2	3.3	5	10.2	-	-	-	-	-	-	23	50.0	-	-	72	49.3
	MV	30	100.0	168	97.7	666	95.8	58	96.7	44	89.8	98	100.0	3	100.0	17	100.0	23	50.0	14	100.0	66	45.2
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	5.5
America (North)	Not MV	735	13.6	296	1.2	10,132	7.4	267	3.7	1,106	15.0	483	2.0	1	0.3	26	1.6	6,838	55.9	460	9.4	12,633	56.9
	MV	4,615	85.2	24,290	98.4	125,981	91.5	6,889	95.7	6,145	83.2	23,494	97.1	340	98.0	1,542	97.2	5,106	41.8	4,322	88.8	2,754	12.4
	Unknown	67	1.2	100	0.4	1,501	1.1	42	0.6	138	1.9	225	0.9	6	1.7	18	1.1	278	2.3	87	1.8	6,826	30.7
Canada	Not MV	70	13.4	73	4.1	2,122	12.9	33	5.2	296	19.1	146	4.1	-	-	6	2.9	951	56.0	85	16.3	2,801	40.6
	MV	407	78.1	1,635	92.6	13,637	82.8	566	90.0	1,222	78.9	3,273	91.1	32	88.9	191	92.7	653	38.4	369	70.7	183	2.7
	Unknown	44	8.4	58	3.3	705	4.3	30	4.8	31	2.0	172	4.8	4	11.1	9	4.4	95	5.6	68	13.0	3,911	56.7
United States	Not MV	665	13.6	223	1.0	8,010	6.6	234	3.6	810	13.9	337	1.6	1	0.3	20	1.4	5,887	55.9	375	8.6	9,832	64.2
	MV	4,208	85.9	22,655	98.8	112,344	92.7	6,323	96.3	4,923	84.3	20,221	98.1	308	99.0	1,351	97.9	4,453	42.3	3,953	90.9	2,571	16.8
	Unknown	23	0.5	42	0.2	796	0.7	12	0.2	107	1.8	53	0.3	2	0.6	9	0.7	183	1.7	19	0.4	2,915	19.0
Asia	Not MV	65	5.3	56	0.9	720	3.1	9	0.9	138	3.2	88	1.3	2	0.4	13	1.7	1,795	38.0	91	8.1	14,484	87.4
	MV	1,150	94.6	6,105	99.1	22,883	96.9	966	99.1	4,167	96.8	6,529	98.6	464	99.6	751	98.3	2,913	61.7	1,039	91.9	1,771	10.7
	Unknown	1	0.1	1	0.0	3	0.0	-	-	-	-	2	0.0	-	-	-	-	16	0.3	-	-	319	1.9
China	Not MV	-	-	-	-	-	-	1	0.9	-	-	1	0.2	-	-	1	2.2	128	11.8	3	1.2	6,321	92.2
	MV	109	100.0	420	100.0	751	99.9	109	99.1	604	100.0	456	99.8	40	100.0	45	97.8	960	88.2	246	98.8	520	7.6
	Unknown	-	-	-	-	1	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	0.2
Cyprus*	Not MV	1	12.5	-	-	3	1.3	-	-	2	16.7	-	-	-	-	-	-	6	40.0	-	-	8	61.5
	MV	7	87.5	67	100.0	236	98.7	4	100.0	10	83.3	28	100.0	-	-	3	100.0	9	60.0	-	-	4	30.8
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	7.7
India	Not MV	-	-	1	3.3	1	1.9	-	-	-	-	-	-	-	-	-	-	1	3.7	-	-	88	96.7
	MV	5	100.0	29	96.7	52	98.1	1	100.0	15	100.0	18	100.0	1	100.0	-	-	26	96.3	2	100.0	2	2.2
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1.1
Israel*	Not MV	5	6.3	11	1.8	198	7.7	1	0.6	13	13.4	13	2.7	-	-	-	-	44	18.2	2	2.0	439	86.1
	MV	74	93.7	585	98.0	2,389	92.3	179	99.4	84	86.6	467	96.9	13	100.0	34	100.0	194	80.2	99	98.0	63	12.4
	Unknown	-	-	1	0.2	-	-	-	-	-	-	2	0.4	-	-	-	-	4	1.7	-	-	8	1.6
Japan	Not MV	-	-	-	-	17	0.3	-	-	-	-	1	0.1	-	-	8	7.0	414	38.8	2	0.8	2,375	81.0
	MV	179	99.4	1,144	100.0	4,951	99.6	162	100.0	806	100.0	1,025	99.9	41	100.0	106	93.0	645	60.4	246	99.2	340	11.6
	Unknown	1	0.6	-	-	1	0.0	-	-	-	-	-	-	-	-	-	-	8	0.7	-	-	218	7.4
Jordan*	Not MV	-	-	1	0.4	5	0.7	-	-	-	-	-	-	-	-	-	-	31	33.0	-	-	66	71.0
	MV	41	100.0	250	99.6	669	99.3	26	100.0	81	100.0	129	100.0	34	100.0	27	100.0	63	67.0	5	100.0	27	29.0
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Supplementary Table 10. Basis of diagnosis by histology group and country, adults (15-99 years of age).

Country	Basis of diagnosis	Ependymoma and choroid plexus tumour		Diffuse and anaplastic astrocytoma		Glioblastoma		Other specified astrocytoma		Unspecified astrocytoma		Oligodendroglial tumour		Medulloblastoma		Other and unspecified embryonal tumour		Unspecified glioma		Other specified neuroepithelial tumour		Unspecified tumour	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Korea*	Not MV	45	12.4	35	2.4	377	6.0	4	3.5	112	9.4	59	2.7	2	1.5	4	1.6	856	68.6	60	19.6	3,422	96.0
	MV	318	87.6	1,404	97.6	5,891	94.0	110	96.5	1,085	90.6	2,144	97.3	134	98.5	249	98.4	392	31.4	246	80.4	141	4.0
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kuwait*	Not MV	-	-	1	4.0	9	8.0	1	25.0	1	5.6	-	-	-	-	-	-	8	40.0	-	-	7	77.8
	MV	3	100.0	24	96.0	103	92.0	3	75.0	17	94.4	21	100.0	8	100.0	1	100.0	12	60.0	3	100.0	1	11.1
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Malaysia	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	40.0	-	-	31	96.9
	MV	3	100.0	6	100.0	35	100.0	-	-	32	100.0	12	100.0	2	100.0	4	100.0	3	60.0	-	-	1	3.1
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Qatar*	Not MV	-	-	-	-	3	2.9	-	-	-	-	-	-	-	-	-	-	5	25.0	-	-	22	88.0
	MV	8	100.0	45	100.0	100	97.1	4	100.0	5	100.0	59	100.0	1	100.0	1	100.0	14	70.0	7	100.0	2	8.0
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	5.0	-	-	1	4.0
Singapore*	Not MV	4	10.5	1	0.9	22	4.6	-	-	2	5.0	2	1.2	-	-	-	-	18	40.9	8	25.0	41	69.5
	MV	34	89.5	106	99.1	452	95.4	42	100.0	38	95.0	167	98.8	1	100.0	27	100.0	26	59.1	24	75.0	18	30.5
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Taiwan*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MV	134	100.0	1,161	100.0	3,412	100.0	97	100.0	636	100.0	1,027	100.0	86	100.0	118	100.0	157	100.0	57	100.0	23	100.0
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thailand	Not MV	-	-	-	-	7	1.2	-	-	-	-	-	-	-	-	-	-	10	13.9	-	-	990	99.3
	MV	33	100.0	183	100.0	557	98.8	36	100.0	506	100.0	120	100.0	22	100.0	39	100.0	62	86.1	7	100.0	6	0.6
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.1
Turkey	Not MV	10	4.7	6	0.9	78	2.3	2	1.0	8	3.1	12	1.4	-	-	-	-	272	43.5	16	14.2	674	49.1
	MV	202	95.3	681	99.1	3,285	97.7	193	99.0	248	96.9	856	98.6	81	100.0	97	100.0	350	56.0	97	85.8	623	45.4
	Unknown	-	-	-	-	1	0.0	-	-	-	-	-	-	-	-	-	-	3	0.5	-	-	76	5.5
Europe	Not MV	191	4.1	240	0.9	7,073	5.4	95	2.2	609	5.5	328	1.4	3	0.3	33	1.6	7,128	49.5	214	6.2	28,032	82.1
	MV	4,460	94.7	25,507	98.4	122,622	93.6	4,132	97.7	10,315	92.8	22,338	97.9	888	99.6	2,020	98.0	6,923	48.0	3,224	93.2	4,088	12.0
	Unknown	58	1.2	164	0.6	1,366	1.0	4	0.1	196	1.8	152	0.7	1	0.1	8	0.4	359	2.5	22	0.6	2,040	6.0
Austria*	Not MV	-	-	-	-	4	0.1	-	-	1	0.2	-	-	-	-	-	-	44	24.6	-	-	148	35.1
	MV	136	76.0	592	93.4	4,650	94.0	7	87.5	397	89.2	529	89.7	7	100.0	104	96.3	118	65.9	33	89.2	209	49.5
	Unknown	43	24.0	42	6.6	295	6.0	1	12.5	47	10.6	61	10.3	-	-	4	3.7	17	9.5	4	10.8	65	15.4
Belgium*	Not MV	-	-	-	-	171	3.3	2	0.8	-	-	-	-	-	-	1	1.4	115	79.3	-	-	353	87.8
	MV	241	100.0	1,014	100.0	5,061	96.7	234	99.2	44	100.0	887	100.0	59	100.0	71	98.6	30	20.7	232	100.0	49	12.2
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Croatia*	Not MV	5	6.8	12	9.8	294	14.0	5	9.4	23	8.4	26	10.4	-	-	2	5.3	25	14.0	-	-	9	7.6
	MV	68	93.2	110	90.2	1,813	86.0	48	90.6	251	91.6	224	89.6	3	100.0	36	94.7	153	86.0	46	100.0	110	92.4
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Czech Republic*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MV	151	100.0	1,474	100.0	4,624	100.0	222	100.0	235	100.0	651	100.0	6	100.0	96	100.0	279	100.0	70	100.0	259	100.0
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Supplementary Table 10. Basis of diagnosis by histology group and country, adults (15-99 years of age).

Country	Basis of diagnosis	Ependymoma and choroid plexus tumour		Diffuse and anaplastic astrocytoma		Glioblastoma		Other specified astrocytoma		Unspecified astrocytoma		Oligodendroglial tumour		Medulloblastoma		Other and unspecified embryonal tumour		Unspecified glioma		Other specified neuroepithelial tumour		Unspecified tumour	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Denmark*	Not MV	7	6.1	11	2.5	82	2.5	13	13.7	16	4.8	31	4.6	-	-	1	1.8	5	6.3	13	16.3	2,556	75.6
	MV	107	93.9	421	97.2	3,259	97.5	82	86.3	314	95.2	638	95.4	29	100.0	55	98.2	74	92.5	67	83.8	764	22.6
	Unknown	-	-	1	0.2	1	0.0	-	-	-	-	-	-	-	-	-	-	1	1.3	-	-	63	1.9
Estonia*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MV	13	100.0	176	100.0	495	100.0	26	100.0	12	100.0	84	100.0	6	100.0	14	100.0	5	100.0	12	100.0	4	100.0
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Finland*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MV	137	100.0	341	100.0	2,282	100.0	173	100.0	437	100.0	729	100.0	2	100.0	44	100.0	123	100.0	172	100.0	40	100.0
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
France	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MV	118	100.0	235	100.0	3,401	100.0	83	100.0	153	100.0	1,499	100.0	64	100.0	27	100.0	315	100.0	126	100.0	31	100.0
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Germany	Not MV	7	1.9	8	0.3	448	2.6	1	0.3	45	3.3	11	0.6	-	-	1	0.6	70	16.1	7	3.5	147	33.6
	MV	357	97.0	2,710	96.1	15,976	93.6	297	99.3	1,258	92.0	1,689	96.4	48	100.0	163	97.0	348	80.0	183	92.0	232	53.0
	Unknown	4	1.1	101	3.6	647	3.8	1	0.3	65	4.8	52	3.0	-	-	4	2.4	17	3.9	9	4.5	59	13.5
Gibraltar*	Not MV	-	-	1	100.0	5	83.3	-	-	1	100.0	-	-	-	-	-	-	2	100.0	-	-	-	-
	MV	-	-	-	-	1	16.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iceland*	Not MV	-	-	-	-	1	0.6	-	-	-	-	-	-	-	-	-	-	5	83.3	-	-	70	100.0
	MV	3	100.0	23	100.0	161	99.4	13	100.0	30	100.0	23	100.0	1	100.0	2	100.0	1	16.7	2	100.0	-	-
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ireland*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MV	50	100.0	339	100.0	1,749	99.9	92	100.0	250	99.6	434	100.0	4	100.0	31	100.0	50	100.0	73	100.0	21	33.9
	Unknown	-	-	-	-	2	0.1	-	-	1	0.4	-	-	-	-	-	-	-	-	-	-	41	66.1
Italy	Not MV	23	5.8	23	1.2	373	3.8	2	0.8	55	7.9	14	0.9	1	1.0	15	9.5	889	48.3	29	11.8	10,235	96.3
	MV	373	94.2	1,971	98.8	9,369	96.2	247	99.2	638	92.1	1,493	99.1	96	99.0	143	90.5	952	51.7	217	88.2	324	3.0
	Unknown	-	-	-	-	2	0.0	-	-	-	-	-	-	-	-	-	-	1	0.1	-	-	71	0.7
Latvia*	Not MV	-	-	1	0.4	4	0.6	-	-	-	-	1	1.3	-	-	1	3.7	3	4.5	1	6.3	512	44.8
	MV	28	100.0	229	99.6	698	99.4	3	100.0	219	100.0	77	98.7	5	100.0	26	96.3	61	92.4	15	93.8	33	2.9
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3.0	-	-	597	52.3
Lithuania*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MV	42	100.0	204	100.0	1,521	100.0	25	100.0	340	100.0	171	100.0	1	100.0	11	100.0	22	100.0	29	100.0	5	100.0
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Malta*	Not MV	-	-	1	1.7	20	21.3	-	-	3	15.8	-	-	-	-	-	-	26	81.3	-	-	74	94.9
	MV	6	100.0	58	98.3	74	78.7	7	100.0	16	84.2	8	100.0	1	100.0	-	-	6	18.8	4	100.0	4	5.1
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Netherlands*	Not MV	2	0.6	79	3.6	35	0.4	29	6.9	29	27.4	29	1.8	-	-	-	-	132	43.0	13	3.4	2,732	96.2
	MV	330	99.4	2,095	96.4	8,483	99.6	393	93.1	77	72.6	1,558	98.2	34	100.0	126	100.0	175	57.0	371	96.6	107	3.8
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway*	Not MV	42	26.9	5	0.9	330	11.6	6	3.8	22	12.7	3	0.5	-	-	-	-	96	34.2	17	12.0	218	61.2
	MV	114	73.1	546	99.1	2,504	88.4	151	96.2	151	87.3	571	99.5	3	100.0	34	100.0	185	65.8	125	88.0	136	38.2
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	0.6

Supplementary Table 10. Basis of diagnosis by histology group and country, adults (15-99 years of age).

Country	Basis of diagnosis	Ependymoma and choroid plexus tumour		Diffuse and anaplastic astrocytoma		Glioblastoma		Other specified astrocytoma		Unspecified astrocytoma		Oligodendroglial tumour		Medulloblastoma		Other and unspecified embryonal tumour		Unspecified glioma		Other specified neuro-epithelial tumour		Unspecified tumour	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Poland*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MV	563	100.0	3,695	100.0	11,406	100.0	325	100.0	1,658	100.0	2,856	100.0	263	100.0	286	100.0	1,177	100.0	178	100.0	535	100.0
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Portugal*	Not MV	-	-	-	-	8	0.2	-	-	-	-	1	0.1	1	2.5	-	-	10	5.5	-	-	100	36.1
	MV	87	100.0	578	100.0	3,539	99.2	125	100.0	390	98.5	1,295	99.7	38	95.0	71	100.0	167	92.3	68	100.0	116	41.9
	Unknown	-	-	-	-	19	0.5	-	-	6	1.5	3	0.2	1	2.5	-	-	4	2.2	-	-	61	22.0
Romania	Not MV	-	-	-	-	-	-	1	25.0	-	-	-	-	-	-	-	-	2	40.0	-	-	35	92.1
	MV	8	100.0	39	100.0	134	100.0	3	75.0	15	100.0	27	100.0	5	100.0	-	-	3	60.0	4	100.0	3	7.9
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Russian Federation	Not MV	-	-	1	0.2	2	0.2	-	-	3	0.4	2	1.1	-	-	-	-	-	-	2	6.3	8	4.1
	MV	44	100.0	446	99.8	912	99.5	59	100.0	769	99.4	174	98.9	2	100.0	62	100.0	121	100.0	30	93.8	175	89.3
	Unknown	-	-	-	-	3	0.3	-	-	2	0.3	-	-	-	-	-	-	-	-	-	-	13	6.6
Slovakia*	Not MV	-	-	-	-	-	-	-	-	-	-	2	0.9	-	-	-	-	-	-	-	-	820	98.8
	MV	97	100.0	716	100.0	1,248	100.0	116	100.0	117	100.0	218	99.1	33	100.0	51	100.0	86	100.0	33	100.0	10	1.2
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Slovenia*	Not MV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MV	14	100.0	150	100.0	1,015	100.0	51	100.0	4	100.0	161	100.0	16	100.0	16	100.0	43	100.0	16	100.0	8	100.0
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spain	Not MV	5	3.3	6	0.6	112	3.5	3	2.2	3	1.1	-	-	-	-	-	-	302	47.9	8	6.3	287	87.5
	MV	147	96.7	1,041	99.3	3,091	96.5	135	97.8	264	98.9	484	100.0	54	100.0	69	100.0	328	52.0	120	93.8	29	8.8
	Unknown	-	-	1	0.1	-	-	-	-	-	-	-	-	-	-	-	-	1	0.2	-	-	12	3.7
Sweden*	Not MV	3	1.4	3	0.3	45	1.0	1	0.6	9	1.3	-	-	-	-	-	-	15	6.1	2	1.1	1,041	95.2
	MV	207	98.6	880	99.7	4,297	99.0	173	99.4	669	98.7	968	100.0	-	-	120	100.0	232	93.9	174	98.9	53	4.8
	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Switzerland	Not MV	18	15.1	1	0.2	121	5.6	3	3.4	8	16.3	-	-	-	-	-	-	39	55.7	10	9.5	161	92.0
	MV	101	84.9	437	99.8	2,054	94.4	84	96.6	41	83.7	364	100.0	33	100.0	36	100.0	31	44.3	95	90.5	14	8.0
	Unknown	-	-	-	-	1	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
United Kingdom*	Not MV	79	7.8	88	1.7	5,018	14.7	29	2.9	391	19.2	208	4.4	1	1.3	12	3.6	5,348	71.3	112	13.2	8,526	82.0
	MV	918	91.1	4,987	97.9	28,805	84.2	958	96.9	1,566	77.1	4,526	94.9	75	98.7	326	96.4	1,838	24.5	729	85.8	817	7.9
	Unknown	11	1.1	19	0.4	396	1.2	2	0.2	75	3.7	36	0.8	-	-	-	-	316	4.2	9	1.1	1,056	10.2
Oceania	Not MV	26	6.8	43	1.8	1,255	8.4	5	2.4	134	15.4	85	3.4	2	4.3	1	0.6	704	65.6	37	15.6	1,427	87.6
	MV	357	93.2	2,319	98.1	13,614	91.4	207	97.6	733	84.3	2,383	96.5	44	95.7	155	99.4	352	32.8	199	84.0	68	4.2
	Unknown	-	-	1	0.0	29	0.2	-	-	2	0.2	2	0.1	-	-	-	-	17	1.6	1	0.4	134	8.2
Australia*	Not MV	24	7.0	38	2.0	982	7.8	5	2.7	111	13.7	75	3.5	2	4.5	1	0.8	522	61.3	35	15.8	1,191	86.3
	MV	317	93.0	1,881	98.0	11,575	92.0	178	97.3	699	86.1	2,076	96.4	42	95.5	132	99.2	313	36.7	185	83.7	55	4.0
	Unknown	-	-	1	0.1	28	0.2	-	-	2	0.2	2	0.1	-	-	-	-	17	2.0	1	0.5	134	9.7
New Zealand*	Not MV	2	4.8	5	1.1	273	11.8	-	-	23	40.4	10	3.2	-	-	-	-	182	82.4	2	12.5	236	94.8
	MV	40	95.2	438	98.9	2,039	88.2	29	100.0	34	59.6	307	96.8	2	100.0	23	100.0	39	17.6	14	87.5	13	5.2
	Unknown	-	-	-	-	1	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

MV: microscopically verified.

\* Data with 100% coverage of the national population.