RESEARCH ARTICLE

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Non-Endemic Infectious Diseases in Belgian Children: A Regional Evaluation of Incidence, Clinical Characteristics and Gaps in National Surveillance

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Keywords

Non-endemic infections; Malaria; Travel diseases; Children; Tropical diseases; Antwerp; Belgium

Abstract

Background

Belgium has no endemic tropical parasitic infectious diseases, yet increasing international travel exposes children to non-endemic pathogens. The incidence of non-endemic infectious diseases in the Belgian paediatric population has not been quantified. We aimed to determine the incidence of paediatric non-endemic infectious diseases in Antwerp province in comparison with national surveillance data.

Methods

A descriptive, retrospective chart review was conducted of children aged 0–16 years diagnosed with non-endemic infectious diseases at three tertiary referral centres in the Antwerp province between 2014 and 2022. Probabilistic record linkage was used to deduplicate patient records across institutions. Annual incidence rates were calculated using the paediatric population of the Province of Antwerp as denominator.

Results

A total of 174 children were diagnosed with non-endemic infections over the nine-year study period. Malaria accounted for the majority (n=142; 81.6%), followed by leishmaniasis (n=13; 7.5%), dengue (n=7; 4.0%), rickettsiosis and Zika virus infection (n=4 each; 2.3%), and chikungunya virus (n=2; 1.1%). The annual incidence ranged from 2.7 to 9.4 per 100,000 children (nine-year mean 5.2/100,000; cumulative incidence 4.7/100,000). Diagnosis was strongly seasonal, peaking in August and September, corresponding to the post-summer school holiday period. A marked reduction was observed during the COVID-19 pandemic years (2020–2022). Source countries spanned 31 nations. No single national data source provided complete, age-disaggregated paediatric incidence data for comparison.

Conclusions

Non-endemic infectious diseases, predominantly malaria, occur in the Belgian paediatric population with an incidence consistent with travel- or migration-related acquisition. The absence of a unified, age-disaggregated national paediatric registry for non-endemic infections represents a significant surveillance gap. A standardised reporting system for non-endemic infectious diseases in children is needed to support clinical vigilance, public health policy, and emerging disease preparedness.

Introduction

A disease is considered endemic when it is consistently present but limited to a particular region with a predictable spread and rate of occurrence (1). Belgium has no endemic parasitic or zoonotic infectious diseases associated with tropical regions (2). Although weather conditions and environmental factors such as food supply, sanitation, and optimal breeding circumstances influence disease presence, changes in endemicity are influenced by eradication programmes, importing a vector through travel or migration, and regional climate change (3,4).

Historically, the last cases of endemic malaria, *Plasmodium vivax* called "polderkoorts", in Belgium were reported in 1938 (5). Yet a number of malaria cases have been reported in areas around Belgian airports (6). Despite malaria being eradicated in Europe in the late 1970s, recent reports suggest that potential vector species have re-established themselves, especially in Greece and Spain, partly influenced by climate change (7). Cases of local infections have also been detected in Brussels and Antwerp (6,8).

Non-endemic diseases in Belgium have not been consistently reported, but with several international airports and harbours, the import of diseases is very likely (9). Previously, individuals working in travel-related occupations were considered at the highest risk for contracting non-endemic infections, but with the increase in mobility of families with children, the general population is increasingly at risk of these infections (9). As the recent COVID-19 pandemic and hantavirus infections among European cruise ship passengers illustrated, no country's borders are immune to the spread of infections (11,12).

The incidence of non-endemic diseases amongst children in Belgium is not documented separately from

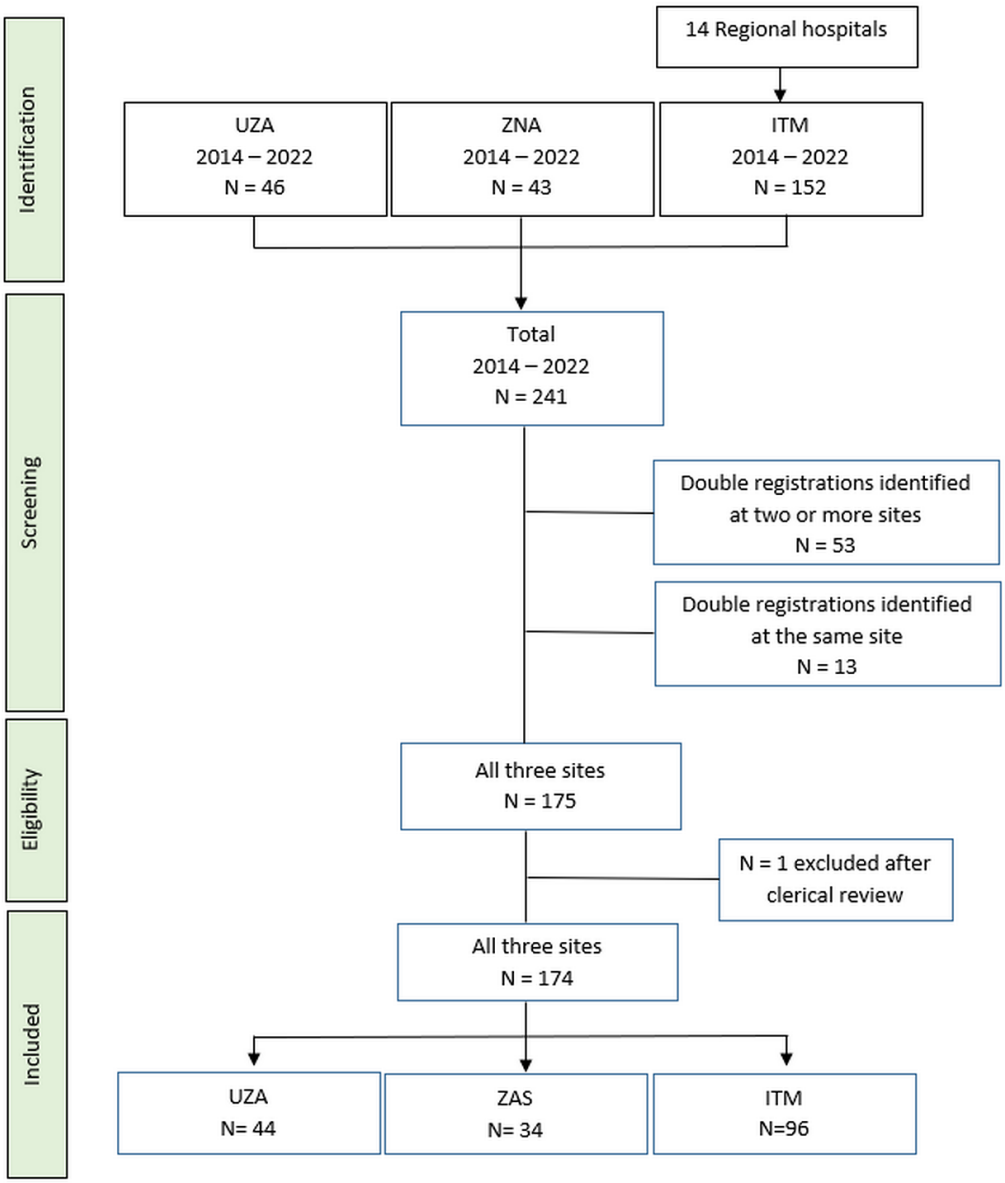


FIGURE 1: A PRISMA flow diagram of the methodology to include patients diagnosed with non-endemic, acute infectious diseases in the Antwerp region between 2014 and 2022.

adults (13). This study aimed to determine the incidence of paediatric non-endemic infectious diseases in the Antwerp region, and evaluate trends in incidence.

Methods

The study was a descriptive, retrospective, laboratory diagnosis-based study of patients diagnosed with non-endemic infectious diseases in the Antwerp province of Belgium between 1 January 2014 and 31 December 2022. The data were sourced from laboratory reports of main medical centres that diagnosed and managed non-endemic infectious diseases in the region during the study period. These were the paediatric department of the Antwerp University Hospital (UZA), where outpatients and inpatients with complicated infections are treated; the Antwerp Hospital Network Queen Paola Children's Hospital and Jan Palfijn (ZAS), where ambulatory and uncomplicated patients are admitted for treatment; and the Institute of Tropical Medicine in Antwerp (ITM), where ambulatory patients are treated and where national confirmatory diagnostics are performed. Other regional hospitals mostly refer diagnostic testing to ITM for confirmation, but may send confirmation samples to academic hospitals outside of the province. Independently of diagnostic confirmation, during the time of the study, patients who are diagnosed at ITM and can be treated on an outpatient basis and/or have an uncomplicated clinical presentation, are managed at ITM. Patients who are in need of intravenous treatment, need blood transfusions or have a complicated clinical presentation are managed at ZAS or UZA.

Initial cases were identified through the laboratory reports of the ITM, ZAS (one laboratory for Queen Paola Children's Hospital and Jan Palfijn) and UZA. Epidemiological and disease-related data were

collected at the three hospitals, including age at diagnosis, sex, date of diagnosis, and postal code. Children, whether migrants or travelling, between 0 and 16 years old were included if diagnosed in the Antwerp region with a non-endemic infectious disease. For the purposes of this study, non-endemic infectious diseases were operationally defined a priori as a predefined group of predominantly imported, tropical, vector-borne, epidemic-prone or high-consequence infections that are absent, uncommon or primarily travel-associated in Belgium. The definition was intended to provide a consistent study-specific framework rather than an exhaustive classification of all infections that may be acquired outside Belgium. Classification was based on the established epidemiology and geographical distribution of each infection, informed by Sciensano, the recognised Belgian and international public health authority.

All diseases were diagnosed and confirmed with internationally standardised laboratory tests applicable to each specific disease (Appendix A). Patients with inconclusive laboratory results, those transferred across country borders after diagnosis in another country, or those with a home address outside the Antwerp region were excluded. The primary outcome was annual incidence of laboratory-confirmed non-endemic infectious diseases per 100,000 children. The incidence per 100,000 children aged 0–16 years was calculated with the aid of population numbers sourced from Antwerp province population registries (14). Secondary outcomes included disease distribution, temporal trends, seasonal variation and geographical origin of infection.

Record linkage

A total of 46, 43 and 152 patients were diagnosed at UZA, ZAS and ITM, respectively. These patients were compared across the three hospital-based datasets. As there were no common unique identifiers in all the sets, record linkage (Figure 1) was performed using probabilistic record-linkage techniques with variables such as name(s), surname, date of birth, sex, and date of diagnosis to link patients between the three datasets. After 53 patients were removed due to double registrations at two separate hospitals and 13 were removed due to double registrations in the same hospital (more than one diagnostic sample from the same patient), there were 175 patients identified for possible inclusion. After a manual review of the combined data, one patient with a residential postal code outside the Antwerp region was excluded.

Evaluation of seasonal variations and geographic origin of infections

All dates of diagnosis of included patients were plotted on a graph to establish the possibility of seasonal variations and the impact of the COVID-19 pandemic on non-endemic diagnoses. The countries of origin or travel destination of all patients were sourced from patient records to determine the geographic footprint of the diseases diagnosed in the Antwerp region.

Registry data in Belgium

To source national incidences of non-endemic infectious diseases in the Belgian paediatric population, we accessed the Sciensano annual epidemiological reports and the European Centre for Disease Prevention and Control (ECDC) epidemiological reports. Sciensano is the national coordinating authority of health activities and policy implementation in Belgium, where the ECDC identifies, assesses, and communicates the risks of imported and emerging non-endemic infectious diseases to protect EU/EEA member states (15,16). Due to limited data, we performed a literature search on Google Scholar and PubMed including, but not limited to, the search terms "tropical disease", "Belgium", "children", and disease-specific names. We sourced additional data from the Community Authorities of Antwerp to determine alternative sources of incidences, populations at risk, and disease surveillance data.

Available national data sources for non-endemic paediatric infections in Belgium

Belgium maintains several overlapping national surveillance systems for infectious diseases, coordinated primarily by Sciensano (15,17). These were evaluated for their capacity to provide population-representative, paediatric-specific annual incidence data for non-endemic infections. The mandatory notification registry via the Department of Health requires notification of vector-borne diseases such as malaria, dengue, and chikungunya if it is suspected that the infection was acquired within the European continent. Standard imported travel cases are monitored through laboratory networks rather than the mandatory registry. Leishmaniasis, Zika virus and rickettsiosis are not on the list of mandatory notifiable diseases for regional health authorities in Belgium. The system is governed by decrees issued by regional health authorities, consolidated nationally by Sciensano. The National Reference Laboratory (NRL) for *Plasmodium* at ITM compiles annual confirmatory malaria diagnostics nationally and provided the most reliable national comparator for this study. The sentinel laboratory network (EPILABO) covers several non-endemic pathogens on a voluntary basis whilst the Minimal Hospital Dataset (MZG/RHM) captures all admitted inpatients with ICD-coded discharge diagnoses but excludes ambulatory diagnoses. The PediSurv paediatric sentinel network is purpose-built for infectious diseases in children under 15 years but covers only vaccine-preventable diseases and does not capture travel- and migration-associated tropical infections (17). At the European level, the ECDC Surveillance Atlas (TESSy) provides long-term country-level comparator data without paediatric age disaggregation.

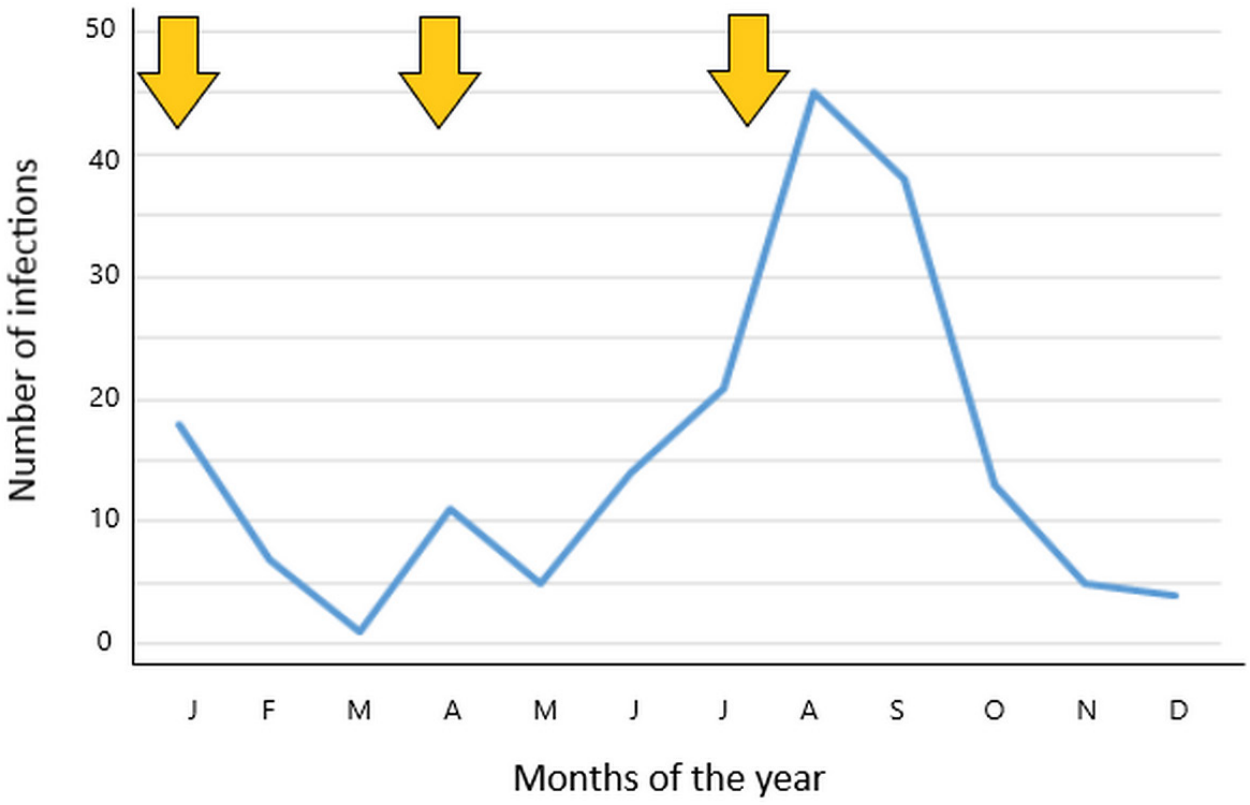


FIGURE 2: Seasonal variation of infections per month over the study period. Arrows indicate school holiday periods.

Statistical analysis

Analysis was performed using IBM SPSS version 26 (IBM Corporation, USA). The population at risk was based on the paediatric population of the Province of Antwerp of children from 0 to 16 years old. A p-value less than 0.05 was considered significant for all calculations. Annual incidence rates are expressed per 100,000 children (14). Ethical approval was granted by the Antwerp University Hospital Ethical Committee (Ref: 20/21/270) with reciprocal approval from the other three hospitals.

Results

Epidemiology

A total of 174 children were diagnosed with non-endemic infections in the Antwerp region (Table 1). The total annual incidence for the province ranged from 2.7/100,000 (in 2020) to 9.4/100,000 children (in 2018) with a nine-year mean of 5.2/100,000. The cumulative incidence over nine years was 4.7/100,000 children.

Of the 174 children, 142 (81.6%) had malaria, 13 (7.5%) leishmaniasis (11 cutaneous and 2 visceral), seven (4.0%) dengue, followed by rickettsiosis and Zika virus infection (n=4 each; 2.3%), chikungunya (n=2; 1.1%), and orthoflavivirus infection (not specified) and schistosomiasis with one each (0.6%). The number of diagnoses per hospital can be seen in Table 1. None of the other non-endemic infectious diseases listed in Appendix A were diagnosed in the province of Antwerp in the study population between 2014 and 2022.

Evaluation of seasonal variations and geographic origin of infections

Over the study period, the month with the highest number of diagnoses (Figure 2) was August (n=45, 25.9%), followed by September (n=38, 21.8%), July (n=21, 12.1%), and January (n=18, 10.3%). The next most frequent months of diagnosis were June (n=14; 8.0%) and October (n=13, 7.5%).

The years with the highest number of diagnoses (Table 1 and Figure 3) were 2018 (n=35; 20.1%), followed by 2016 (n=25; 14.4%) and 2017 (n=20; 11.5%). The lowest numbers of diagnoses were during the COVID-19 pandemic period: 2020 (n=10; 5.7%), 2021 (n=16; 9.2%), and 2022 (n=15; 8.6%).

The countries of origin (Figure 4) included 19 African countries, six Asian countries, four Central and South American countries, and two European countries. The majority of *Plasmodium* infections were from equatorial African countries (n=19/21; 90.5%), whilst the majority of dengue infections originated from Asian countries (n=3/4; 75%). The Zika virus infections originated from Central and South American countries (Brazil, Dominican Republic, Mexico, and Venezuela), and rickettsiosis from South Africa.

TABLE 1: Total non-endemic infectious diseases diagnosed in the Greater Antwerp Region between 2014 and 2022.

Year	UZA	ZAS	ITM	Total	Incidence (per 100,000)
2014	5	4	10	19	7.0
2015	4	3	8	15	5.5
2016	7	5	13	25	9.2
2017	5	4	11	20	7.4
2018	8	9	18	35	9.4
2019	5	5	12	22	5.9
2020	2	2	6	10	2.7
2021	4	3	9	16	4.3
2022	4	3	8	15	4.0
Total	44	34 *	96	174	6.16 (mean)

*ZAS total adjusted after record linkage (34 unique patients).
Incidence = cases per 100,000 paediatric population (0–16 years), Province of Antwerp.

Limitations in comparative evaluations for infections

The operational definition of non-endemic infectious diseases was based on a predefined disease list and did not encompass all infections that may be associated with travel, migration or residence in endemic regions. Consequently, conditions such as strongyloidiasis, echinococcosis, enteric fever and amoebiasis were not systematically captured.

Formal comparative evaluation between the Antwerp regional data and national or European datasets was not possible for four reasons. First, none of the available Belgian surveillance systems (MATRA, EPILABO, or the MZG/RHM hospital dataset) routinely publish age-disaggregated paediatric incidence data for non-endemic infections, meaning like-for-like rate comparisons cannot be made without a formal data access request and bespoke extraction. Second, the only system purpose-built for paediatric infectious disease surveillance (PediSurv) covers exclusively vaccine-preventable diseases and does not capture any of the travel- and migration-associated tropical infections studied here. Third, systems that do capture relevant pathogens (EPILABO, MZG/RHM) either rely on voluntary participation with variable coverage or exclude ambulatory diagnoses entirely, introducing systematic undercounting relative to the present study's case ascertainment methodology. Fourth, the ECDC Surveillance Atlas (TESSy) provides country-level aggregate data only, without the paediatric age-band disaggregation needed to construct a meaningful national comparator cohort. Where a disease is covered only by voluntary sentinel networks, Belgian data reported to ECDC may be incomplete or not comparable with other Member States. In summary, no single existing data source provides a fully representative, paediatric-specific annual incidence of non-endemic infections in Belgian children, the principal epidemiological gap this study evaluates.

Discussion

Belgium has developed a comprehensive and structured approach to managing infectious diseases, including those not typically found within its borders (17,18). With its central location in Europe and a high volume of international travel, Belgium should be particularly vigilant about tracking diseases that might be imported by travellers or migrants, especially in vulnerable populations like children (19). With increasing incidences of non-endemic infectious diseases in Mediterranean European regions, our study has shown that the reported cases in Antwerp province, served by an international harbour and airport, increased during seasonal travel or school holidays to endemic countries. Furthermore, multicultural, foreign-born populations, particularly those living in metropolitan areas, are often identified as "hard-to-reach" for preventive care and pre-travel health advice, especially when travelling to visit friends and relatives (20,21).

Children returning from endemic regions may present to primary care physicians unfamiliar with non-endemic pathogens, contributing to delayed or missed diagnoses (22). The marked post-holiday peak in diagnoses, with 25.9% of all cases presenting in August alone, provides a practical clinical signal: an elevated index of suspicion for non-endemic infections is warranted in febrile children presenting in the weeks following school holidays. Travel authorities in Belgium do not systematically record the movements of minors across borders, limiting the ability to define the true denominator population at risk and contributing to under-representation in national surveillance data (17,18).

Belgium participates in European surveillance through Sciensano (23), which consolidates mandatory notification data and submits returns to the ECDC via TESSy (18). Although this infrastructure

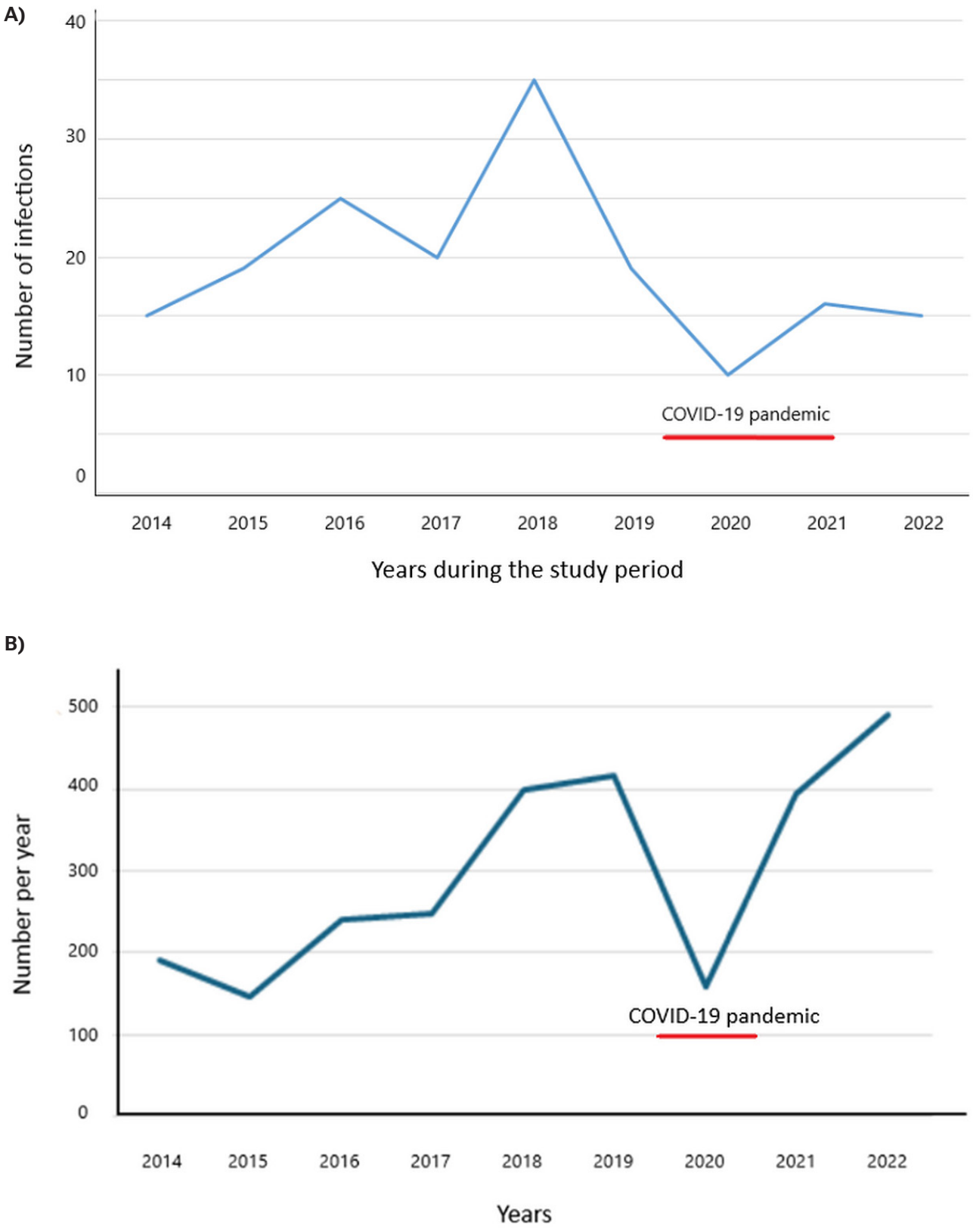
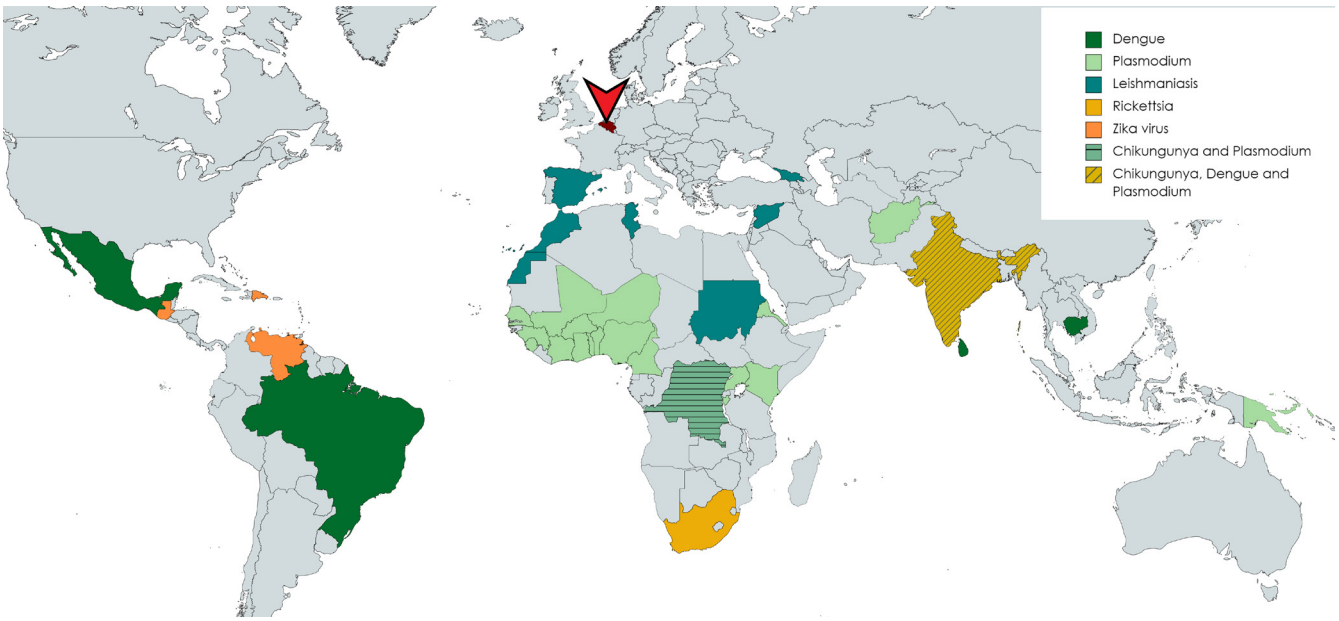


FIGURE 3: Yearly variation in the number of infections during the study period.
A) Antwerp paediatric population. B) Total numbers diagnosed in Belgium (national NRL/Sciensano data).

is well established, the absence of a dedicated, age-disaggregated paediatric stream for non-endemic infections remains a structural gap. Extending the PediSurv sentinel network to include imported tropical infections would substantially strengthen national paediatric surveillance and support clinical education targeting primary and secondary care physicians (24). Therefore, annual incidence estimates presented here should be interpreted with caution given their limited statistical precision. Several annual cohorts contained fewer than 15 cases, at which sample sizes Poisson-based rate estimates carry substantial uncertainty.



Ziver - Belgium

FIGURE 4: The geographic origin of infections. Countries shaded according to region of acquisition. Belgium is the country of the study.

Whilst a descriptive tendency towards higher incidence in pre-pandemic years is apparent in Figure 3, this trend has not been formally tested. Collaboration between travel medicine services and paediatric centres should be strengthened to enable pre-travel prophylaxis advice and post-travel febrile illness screening for returning children.

Our study was based on laboratory results without systematic confirmation against clinical documentation or clinically diagnosed cases without laboratory confirmation. Consequently, some clinically suspected infections may not have been captured. Furthermore, a positive laboratory result does not necessarily indicate clinically active disease. Therefore, for retrospective surveillance of uncommon and non-endemic infections, laboratory records provide a relatively objective, standardised and reproducible method of case identification, but may still underdiagnose cases. Retrospective identification through clinical records is challenging because diagnostic terminology, coding and documentation may vary between clinicians over time, and suspected diagnoses may be recorded inconsistently or without subsequent confirmation. Laboratory information systems may therefore represent the most reliable starting point for systematically identifying these uncommon infections, but more clinical and national health system-based approaches should support laboratory results to confirm clinically relevant diseases.

The marked reduction in diagnoses during 2020–2022 is consistent with international travel restrictions imposed during the COVID-19 pandemic and mirrors trends reported in European national malaria surveillance. Whether the post-pandemic period represents a full recovery to pre-pandemic incidence levels remains unclear: the 2022 figure (n=15) is below the pre-pandemic annual mean, but a definitive recovery trajectory cannot be determined within this study window. Continued surveillance beyond 2022 is needed to distinguish a temporary interruption from a sustained depression of travel-related infections in Belgian children. In recent European history, locally acquired West Nile virus, dengue and chikungunya cases have increased, as close as Belgium's direct neighbouring country, the Netherlands (23).

Figure 3B presents national malaria case counts from Sciensano/NRL data alongside the Antwerp regional data (24). The parallel COVID-19 pandemic dip in both series supports the validity of the regional dataset as a reflection of national trends. However, no formal statistical comparison of provincial and national proportional trends has been performed. In Belgium the number of imported malaria cases increased between 2015 and 2022, excluding during the COVID-19 period by 83% (25). More than 82% were caused by *P.falciparum*, which is in line with the high proportion of patients that travelled to Africa, mainly during school holiday periods. The increase can be only partially explained by the increasing number of laboratories from external hospitals sending samples for confirmation and represents the resumed post-pandemic "catch-up" travelling from malaria-endemic countries (26). Belgium's migrant health screening framework, administered through Fedasil, the Belgian Federal Agency for the Reception of Asylum Seekers,

TABLE 2: Demographic and diagnostic characteristics of patients diagnosed with non-endemic infectious diseases across the three centres, Antwerp region, 2014–2022.

Characteristic	UZA (n=44)	ZAS (n=34)	ITM (n=96)	Total (n=174)
Malaria – total	41 (93.2%)	32 (94.1%)	69 (71.9%)	142 (81.6%)
P. falciparum	34 (82.9%)	16 (50.0%)	50 (72.5%)	100 (70.4%)
P. vivax	4 (9.8%)	13 (40.6%)	13 (18.8%)	30 (21.1%)
P. ovale	3 (7.3%)	2 (6.3%)	4 (5.8%)	9 (6.3%)
P. malariae	0	0	2 (2.9%)	2 (1.4%)
Leishmaniasis	0	1 (2.9%)	12 (12.5%)	13 (7.5%)
Dengue	2 (4.5%)	0	5 (5.2%)	7 (4.0%)
Rickettsiosis	0	0	4 (4.2%)	4 (2.3%)
Zika virus infection	0	0	4 (4.2%)	4 (2.3%)
Chikungunya	0	0	2 (2.1%)	2 (1.1%)
Orthoflavivirus infection	1 (2.3%)	0	0	1 (0.6%)
Schistosomiasis	0	1 (2.9%)	0	1 (0.6%)
Male sex	31 (70.5%)	20 (58.8%)	58 (60.4%)	109 (62.6%)
Median age, years (range)	9 (2–16)	7 (1–16)	8 (1–16)	8 (1–16)

is narrowly focused and does not extend to non-endemic tropical infections (18). According to Belgian reception policy, all asylum applicants older than five years are intended to undergo chest radiography for tuberculosis on arrival at reception centres and repeated every six months during the first two years of residence (26). Beyond tuberculosis, no national protocol exists for the systematic screening of non-endemic tropical or parasitic infections, including malaria, leishmaniasis, dengue, schistosomiasis, filariasis, or Chagas disease, in newly arrived migrants or asylum seekers, regardless of their country of origin. The European approach to infectious disease screening among newly arrived migrants continues to evolve. While screening programmes have historically focused predominantly on tuberculosis, HIV and viral hepatitis, more recent European guidance increasingly supports risk-based screening according to country of origin and migration history (27). The European Centre for Disease Prevention and Control (ECDC) recommends targeted screening for tuberculosis, HIV, hepatitis B and C, as well as strongyloidiasis and schistosomiasis in migrants from relevant endemic regions (27,28). Several European countries and regions have subsequently incorporated selected parasitic and tropical infections, including strongyloidiasis, schistosomiasis and Chagas disease, into migrant screening recommendations or programmes (29). Nevertheless, implementation remains heterogeneous across Europe, and comprehensive screening for the broader spectrum of imported tropical infections is not routinely undertaken. Belgium has not implemented European Centre for Disease Control guidance on screening newly arrived migrants for non-endemic pathogens beyond tuberculosis, and no Belgian equivalent of formal pre-entry tropical disease assessment

APPENDIX A: Tests used to diagnose and confirm diseases.

Disease	Test
Chikungunya	Real-time PCR and serology
Leishmaniasis	Real-time PCR (bone marrow/skin biopsy) and serology
Malaria	Microscopic evaluation on a thick smear Antigen detection Real-time PCR*
Rickettsiosis/rickettsia	Real-time PCR and serology
Schistosomiasis	Serology, stool or urine microscopy
Orthoflaviviruses	Real-time PCR on serum and serology (in case of dengue also NS1 antigen detection)

Abbreviations: PCR - Polymerase chain reaction
*ZAS as of 2020

exists. This absence of systematic screening has two direct implications for interpreting the findings of this study. Migrant children arriving in Belgium as asylum seekers or through other formal or informal routes, not explicitly documented in this study, represent a distinct epidemiological group of children entering Belgium, and who may constitute a subgroup in this cohort not separately identified. Returning travellers acquire infection during a defined, time-limited exposure in an endemic region and typically present within weeks of return while migrant children may carry chronic or subclinical infections acquired before or during transit, potentially over much longer periods (30). Since Belgium has no systematic testing programme for either group at the population level, the two exposure pathways cannot be formally disaggregated in any existing national dataset, including those available to this study.

Known country of origin, whilst recorded in Fedasil intake data, does not substitute for a surveillance system. Even where travel- or migration origin is documented, the absence of systematic testing means that the true burden of non-endemic infections in migrant children in Belgium is almost entirely invisible to surveillance. The Institute of Tropical Medicine performs diagnostics and clinical consultations for migrants who present symptomatically, but this is reactive rather than systematic, and captures only those who seek or are referred for care, leaving a large number of "neglected tropical diseases" undiagnosed (31). The cases identified in the present study therefore likely represent a mixture of symptomatic returning travellers, symptomatic migrant children and international adoptions who presented to one of the three participating centres, with no reliable means of formally distinguishing these groups at the individual or population level. In this study the origin of diseases was mapped based on recording a simple travel history. This can easily be reported voluntarily and recorded at national ports of entry and departure in Belgium to facilitate the proactive documentation of potentially at-risk travellers.

Taken together, this represents a further dimension of the surveillance gap identified in this study. The incidence estimates presented here almost certainly undercount the true burden of non-endemic infections in Belgian children, not only because of the limitations inherent in tertiary-centre ascertainment and the absence of paediatric-stratified national registry data, but also because a potentially significant subgroup, migrant children with subclinical or unrecognised non-endemic infections, falls outside the reach of both this study and all existing Belgian surveillance mechanisms. A national screening protocol for non-endemic tropical infections in newly arrived migrant children, stratified by region of origin, would be aa meaningful and achievable step towards closing this gap, would generate the comparative denominator data, and improve the overall health of this population, that are currently absent from Belgian public health surveillance (32).

Several limitations must be acknowledged. First, this study is restricted to four tertiary- and secondary referral centres in one Belgian province. Cases managed exclusively in primary care or by general practitioners without specialist referral are not captured, meaning the true incidence is likely underestimated. In addition, some samples were processed in referral centres not participating in the study which contributes to an underestimation of incidence. Second, the study population was defined as children aged 0–16 years, which deviates from the WHO and most national definitions of childhood (0–18 years), reducing comparability with other published series and excluding paediatric travel- and migration-related infections in 17-year-olds. Third, children who acquired a non-endemic infection but did not seek healthcare due to mild or self-limiting symptoms are absent from the dataset, introducing ascertainment bias towards more severe clinical presentations. Fourth, the population denominator (paediatric population of the Province of Antwerp) approximates the population at risk; the true denominator should be the number of children travelling to endemic regions, data not systematically collected for minors in Belgium. Fifth, small annual cohort sizes in several years preclude robust per-disease subgroup analyses for rare infections.

We recommend the development of a single, standardised database for the registration of non-endemic infectious diseases in children in Belgium. This would lead to more accurate incidence data and research into tropical diseases in Belgium, and would increase understanding of the dynamics of non-endemic disease in the context of climate change, findings applicable to other countries (33). For organisations such as Sciensano and the European Centre for Disease Control, improved data could lead to more accurate health impact assessments and inform economic consequence analyses (33). Beyond surveillance, these data would identify gaps in diagnosis and clinical management, and provide an evidence base for national guidelines and referral pathways.

Conclusion

Non-endemic infectious diseases occur in Belgian children, but their incidence is not systematically documented at the national level. With increasing global population movement and climate change, new diseases are diagnosed in regions where they have not traditionally been diagnosed. Increased registration and timely interventions may improve by raising awareness among primary and secondary care physicians.

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