

# **Indicator of potentially avoidable hospitalisations for the Child and Youth Wellbeing Strategy**

A brief report on methodology

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# Acknowledgements

The development of the indicator of potentially avoidable hospitalisations was led by the Health and Disability Intelligence (HDI) and managed by a working group which comprised:

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A draft of the condition list of potentially avoidable hospitalisations was reviewed by internal and external experts, including:

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This brief report was written by Zhi-ling (Jim) Zhang.

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# Introduction

Potentially avoidable hospitalisations (PAH) is an indicator of health-related outcomes under the Child and Youth Wellbeing Strategy<sup>1</sup> and a Child Poverty Related Indicator (CPRI) required by the Child Poverty Reduction Act 2018.<sup>14</sup> Data on PAH is not routinely collected by the health system. This report briefly describes the development of the indicator using the routinely collected National Minimum Dataset for hospital inpatient events (NMDS).

The PAH indicator is required to help the government:

- better understand the social determinants of child health
- monitor the collective efforts of health and other sectors on improving the health status of this population subgroup.

To meet the purpose of the indicator and to be in line with the vision and guiding principles of the Child and Youth Wellbeing Strategy,<sup>2</sup> the definition of PAH is broad. It includes hospitalisations that can potentially be avoided by:

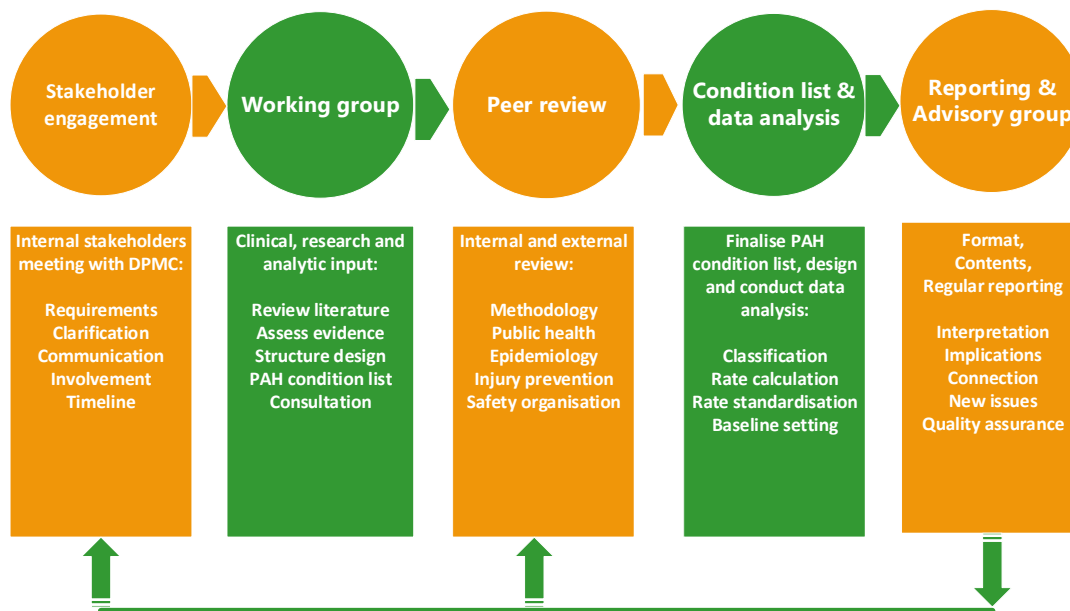
- the provision of appropriate healthcare interventions and early disease management, usually delivered in primary care and community-based care settings (ambulatory sensitive hospitalisations (ASH))
- public health interventions, such as injury prevention, health promotion and immunisation
- social policy interventions (such as income support and housing policy).

Hence, the concept of PAH used in this work takes a broader approach than ASH, considering many socioeconomic factors, including income and housing.

# Methods of development

## Processes

The following chart shows the main processes used in this work.



These processes were designed to involve key stakeholders with relevant expertise in the exercise within a tight timeline and to consider the needs of further development and quality assurance of the work (setting up an advisory group).

## Literature searching and preliminary data analysis

We searched Medline in Ovid datasets for relevant publications, especially for New Zealand studies. Internet search was also conducted to find technical reports on PAH. A New Zealand study<sup>3</sup> was used as a base for this work.

We also considered other sources of information, including current methodology of ASH, and the condition list for the Better Public Services (BPS 3).

Total hospitalisations in the population under 25 years old were also analysed during the project scoping. Hospitalisation rates (per 1,000 population) are significantly higher among those aged 0–14 years when compared with those aged 15–24. The patterns for the causes of hospitalisations are also considerably different, especially in the rates of respiratory diseases and injuries. The age group differences were considered in determining PAH conditions. For example, a medical condition can be determined as potentially avoidable in children, but not in youth if the mechanism of preventing hospitalisation cannot be applied to youth.

## Structure of PAH conditions

Based on the literature review, preliminary data analysis, and the internal and external consultation, 16 main categories are included in PAH. Table 1 lists the main categories and the potential mechanisms to avoid hospitalisation for each category.

**Table 1: Main categories and potential mechanisms to avoid hospitalisation**

Main category	Primary care intervention	Public health intervention	Social policy intervention
Respiratory conditions	✓		✓
Dental conditions	✓	✓	✓
Gastrointestinal diseases	✓	✓	✓
Nutrition deficiency and anaemia	✓	✓	✓
Cardiovascular diseases	✓	✓	✓
Otitis media	✓		✓
Dermatological conditions	✓	✓	✓
Diabetes complications	✓	✓	✓
Kidney, urinary tract infection	✓		
Sexually transmitted infections	✓	✓	
Vaccine-preventable diseases	✓	✓	✓
Meningococcal infection	✓	✓	✓
Epilepsy	✓		
Other non-injury conditions	✓		
<b>Injury and poisoning</b>			
Unintentional injuries		✓	✓
Intentional injuries		✓	✓

In general, each main category contains some subcategories. For example, **respiratory conditions** contains five subcategories:

- pneumonia
- bronchitis/bronchiolitis/bronchiectasis
- asthma
- upper respiratory and ears, nose and throat (ENT) infections
- lower respiratory tract infection (LRTI).

For non-injury conditions, subcategories are based on the principal diagnosis of the hospitalisation. However, subcategories of injury conditions are based on the external cause of the injury that are critical factors for injury prevention. The classification of the external cause of injury is modified from the method used in the second National Study of the Burden of Diseases and Injuries,<sup>4</sup> and is generally in agreement with a classification system used by the Centres for Disease Control and Prevention (CDC).<sup>5</sup>

Each subcategory contains individual diagnoses. For example, the subcategory of **Asthma** under **respiratory conditions** contains three principal diagnoses:

- asthma (ICD-10-AM code J45)
- status asthmaticus (ICD-10-AM code J46)
- wheezing (ICD-10-AM code R062).

PAH was determined at this level of individual diagnosis to be potentially avoidable in the age groups 0–14 years and/or 15–24 years.

The main categories, subcategories and diagnoses of PAH are listed in Appendix 1, with detailed ICD-10-AM (8th Edition) codes.

## Methodological considerations on non-injury conditions

### Neonatal hospitalisation events

Neonatal (infants under 28 days) non-injury conditions are excluded from the ASH and BPS3 methodology,<sup>6,7</sup> due to the clinical complexity and different hospital admission criteria.

Neonatal hospitalisations include conditions caused by low birth weight and preterm birth. These two conditions are also associated with many medical conditions in children and youth. However, the target population (pregnant women) to prevent low birth weight and preterm birth can be quite different from the target population (children and youth, aged 0–24 years) of other PAH conditions. In addition, another indicator of prenatal care has been designed under the Child and Youth Wellbeing Strategy.<sup>2</sup> Considering all these factors, this work follows established protocol<sup>6,7</sup> to exclude non-injury neonatal hospitalisations from PAH.



## Type 1 diabetes, epilepsy and febrile convulsions

A review of literature shows there are different conclusions on whether type 1 diabetes, epilepsy and febrile convulsions are PAH.

During the consultation, it was advised that type 1 diabetes and epilepsy can be effectively managed in a primary care setting, and therefore hospital admission is potentially avoidable.

In contrast, febrile convulsions are unlikely to be potentially avoidable admissions, due to individual differences in responding to fever. Febrile convulsions are therefore excluded from the PAH list.

## Influenza due to certain identified influenza virus (ICD-10-AM code J09)

This group of conditions is not included in PAH in the literature reviewed. This is likely because H5N1 influenza (bird flu) is in this group (according to ICD-10-AM classification). H5N1 influenza cannot be separated from other conditions in the group. H5N1 influenza is currently not a vaccine-preventable disease.

However, no H5N1 influenza has been identified in New Zealand since 2003. Therefore, cases coded under J09 can be considered as non-H5N1 influenza. Furthermore, clinical notes available in the data warehouse for hospitalisations coded as J09 show that most of the cases are H1N1 influenza, which is a vaccine-preventable disease.

Influenza due to certain identified viruses is therefore included in PAH under vaccine-preventable diseases.

## Methodological considerations on injury conditions

Physical injuries are generally considered as preventable; however, very few studies included injuries in the scope of PAH. There is a lack of well-established or accepted methodology to cover injuries under PAH. Injuries are included in this work, with some exceptions.

## Adverse effects, not elsewhere classified (ICD-10-AM codes T780–T789)

These primary codes are used 'to identify the effects, not elsewhere classifiable, unknown, undetermined or ill-defined causes'.<sup>8</sup> This includes anaphylactic shock due to adverse food reaction, anaphylactic shock (unspecified), other adverse food reactions (not elsewhere classified), angioneurotic oedema, allergy (unspecified), other adverse effects (not elsewhere classified) and adverse effect unspecified. This group is excluded

from the PAH definition mainly because of the nature of the conditions and the unclear causes of the conditions.

## Complications of surgical and medical care (ICD-10-AM codes T80–T88, T983)

This category includes complications following infusion, transfusion and therapeutic injection, procedures, prosthetic devices, implants and grafts, and failure and rejection of transplanted organs and tissues. Other unspecified, and sequelae of complications of surgical and medical care (T88, T983) are also included in this group.

Some conditions in this group could be prevented by improved patient safety and quality of care. However, more detailed literature searching, evidence assessment and consultation are needed to determine the inclusion or exclusion for individual conditions. The tight timeline means we are unable to carry out this analysis at this stage. This group is therefore excluded from the PAH definition.

## External causes of the complications of surgical and medical care (ICD-10-AM codes Y40–Y59, Y60–Y69, Y70–Y82, Y83–Y84, Y88, Y95)

Hospitalisations with these external causes of complications of surgical and medical care are also excluded from the PAH definition for the same reasons as described in the previous section.

## Unspecified external causes (ICD-10-AM codes X58, X59, Y86, Y899)

These external causes do not contain meaningful information on the injury mechanism. Hospitalisations with these codes are therefore excluded.

## Injury intention undetermined (ICD-10-AM codes Y10–Y34, Y872)

About 1% of hospitalisations due to injury in patients aged under 25 years were coded as injury intention undetermined. Most of them were diagnosed as poisoning. With an injury intention undetermined, it is difficult to analyse how the injury could be prevented. These events are therefore excluded from the PAH definition.

# General rules and flags

As well as the exclusions discussed in the previous sections, there are general rules applied on the PAH definition.

## Overseas patients

These hospitalisation events are identified by domicile codes. They are excluded since they are generally not targeted for the interventions to prevent hospitalisations in New Zealand. Furthermore, the associated population cannot be quantified.

## Non-public hospital events

These events were identified by facility code and accounted for about 13% of all hospitalisation events every year. Clinical coding on these events is usually completed one or two years after discharge. These hospitalisation events are excluded from the PAH definition due to this delay.

## Hospital transfers

Hospital transfer events including within and between hospitals, are identified from NMDS by event timestamps and event end type. Only the first event is counted.

## Emergency department short stay flag

Emergency department (ED) short stay is when a patient is treated in the emergency department for more than three hours. According to the NMDS reporting requirements, these need to be reported as a hospitalisation. ED short stays are identified by the event timestamps and health specialty. Some hospitals have different rules in reporting ED short stays.

ED short stays are flagged in the dataset since these events are relevant in further analysis of regional variations and hospital resources (such as bed days) used.

## Same-day event flag

For the same reasons as ED short stays, same-day events are also flagged in the dataset. A same-day event is when an inpatient is admitted and discharged on the same day. A same-day event is identified by the timestamps of the event.

# Discussion

The process of developing the PAH indicator involved key stakeholders providing specialist knowledge and expertise to determine the conditions that can potentially be avoided from hospitalisation. However, stakeholder engagement with people who would implement changes or take actions (such as social policy makers) may be needed in the future.

Even though we used a broad concept to define PAH, there are still some areas that we were unable to cover due to the time constraints and a lack of information from available data or literature. For instance, occupational diseases are also preventable by occupational health interventions. These diseases can occur among those aged 15–24 years. However, we are unable to identify occupational diseases directly from our routinely collected datasets.

PAH is an outcome measure and cannot always quickly reflect the improvement associated with interventions, due to the time lag between interventions and outcome changes. To monitor the progress in this area, some related process measures may need to be considered (for example, using process measure on housing condition improvement in addition to the measure on respiratory diseases).

In addition to these issues, new research, changes in medical practice and care models, development of treatment and other interventions (such as new vaccines) will also require changes to the PAH condition list as new evidence becomes available. To deal with these issues, an advisory group has been planned to:

- review the results of the indicator and to agree on interpretation and implications of the results
- function as a platform to connect the indicator with internal and external stakeholders, and to drive improvement
- advise on technical issues such as new evidence in relation to PAH, and on responses to relevant queries (from media, for example) on the work.

# **Appendix 1: Condition list of PAH in children and youth**

January 2020

Main category & subcategory	Principal diagnosis/external cause of injury	ICD-10-AM 8th Edition	Age 0-14	Age 15-24	Note
<b>Respiratory conditions</b>					
Pneumonia	Viral pneumonia, not elsewhere classified (NEC) <sup>6</sup>	J12	Included	Included	
	Bacterial pneumonia, NEC <sup>3, 7, 9</sup>	J15	Included	Included	
	Pneumonia due to other infectious organisms, NEC <sup>3, 7, 9</sup>	J16	Included	Included	
	Pneumonia, organism unspecified <sup>3, 7, 9</sup>	J18	Included	Included	
	Pneumonitis due to solids and liquids <sup>6</sup>	J69	Included	Included	
	Abscess of lung with pneumonia <sup>6</sup>	J851	Included	Included	
Bronchitis,	Acute bronchitis <sup>10</sup>	J20	Included	Included	
Bronchiolitis and	Acute bronchiolitis <sup>3, 9</sup>	J21	Included	Excluded	
Bronchiectasis	Bronchiectasis <sup>3, 7, 9</sup>	J47	Included	Included	
Asthma <sup>3, 7, 9-11</sup>	Asthma	J45	Included	Included	
Wheezing	Status asthmaticus	J46	Included	Included	
	Wheezing	R062	Included	Included	
Upper respiratory and ENT infections <sup>3, 7</sup>	Acute nasopharyngitis (common cold)	J00	Included	Included	
	Acute sinusitis	J01	Included	Included	
	Acute pharyngitis <sup>10</sup>	J02	Included	Included	
	Acute tonsillitis <sup>10</sup>	J03	Included	Included	
	Acute laryngitis and tracheitis <sup>3, 9</sup>	J04	Included	Included	
	Acute obstructive laryngitis (croup) <sup>3, 9</sup>	J050	Included	Included	
	Acute upper respiratory infections of multiple and unspecified sites <sup>10</sup>	J06	Included	Included	
Lower respiratory tract infection (LRTI) <sup>7</sup>	Unspecified acute lower respiratory infection	J22	Included	Included	

Main category & subcategory	Principal diagnosis/external cause of injury	ICD-10-AM 8th Edition	Age 0-14	Age 15-24	Note
<b>Dental conditions</b>					
Dental caries	Dental caries <sup>3, 7, 9, 10</sup>	K02	Included	Included	
Diseases of pulp and periapical tissues	Diseases of pulp and periapical tissues <sup>3, 7, 9, 10</sup>	K04	Included	Included	
Gingivitis and periodontal diseases	Gingivitis and periodontal diseases <sup>3, 7, 9, 10</sup>	K05	Excluded	Excluded	
<b>Gastrointestinal diseases</b>					
Peptic ulcer <sup>7, 10</sup>	Gastric ulcer	K25	Excluded	Included	
	Duodenal ulcer	K26	Excluded	Included	
	Peptic ulcer, site unspecified	K27	Excluded	Included	
	Gastrojejunal ulcer	K28	Excluded	Included	
Constipation	Constipation <sup>3, 7, 9</sup>	K590	Included	Included	
Gastroenteritis/dehydration <sup>3, 7, 9</sup>	Cholera	A00	Included	Included	
	Typhoid and paratyphoid fevers	A01	Included	Included	
	Other salmonella infections	A02	Included	Included	
	Shigellosis	A03	Included	Included	
	Other bacterial intestinal infections	A04	Included	Included	
	Other bacterial food-borne intoxications, NEC	A05	Included	Included	
	Amoebiasis	A06	Included	Included	
	Other protozoal intestinal diseases	A07	Included	Included	
	Viral and other specified intestinal infections	A08	Included	Included	
	Other gastroenteritis and colitis of infectious and unspecified origin	A09	Included	Included	
	Nausea and vomiting	R11	Included	Included	

Main category & subcategory	Principal diagnosis/external cause of injury	ICD-10-AM 8th Edition	Age 0-14	Age 15-24	Note
	Noninfective gastroenteritis and colitis, unspecified	K529	Included	Included	
Gastro-oesophageal reflux disease	Gastro-oesophageal reflux disease <sup>3, 7, 9</sup>	K21	Included	Included	
<b>Nutrition deficiency and anaemia</b>					
Anaemia <sup>3, 7, 9</sup>	Iron deficiency anaemia	D50	Included	Included	
	Vitamin B12 deficiency anaemia	D51	Included	Included	
	Folate deficiency anaemia	D52	Included	Included	
	Other nutritional anaemias	D53	Included	Included	
Nutritional deficiency <sup>3, 7, 9</sup>	Kwashiorkor	E40	Included	Included	
	Nutritional marasmus	E41	Included	Included	
	Marasmic kwashiorkor	E42	Included	Included	
	Unspecified severe protein-energy malnutrition	E43	Included	Included	
	Protein-energy malnutrition of moderate and mild degree	E44	Included	Included	
	Retarded development following protein-energy malnutrition	E45	Included	Included	
	Unspecified protein-energy malnutrition	E46	Included	Included	
	Vitamin A deficiency	E50	Included	Included	
	Thiamine deficiency	E51	Included	Included	
	Niacin deficiency (pellagra)	E52	Included	Included	
	Deficiency of other B group vitamins	E53	Included	Included	
	Ascorbic acid deficiency	E54	Included	Included	
	Vitamin D deficiency	E55	Included	Included	
	Other vitamin deficiencies	E56	Included	Included	



Main category & subcategory	Principal diagnosis/external cause of injury	ICD-10-AM 8th Edition	Age 0-14	Age 15-24	Note
	Dietary calcium deficiency	E58	Included	Included	
	Dietary selenium deficiency	E59	Included	Included	
	Dietary zinc deficiency	E60	Included	Included	
	Deficiency of other nutrient elements	E61	Included	Included	
	Other nutritional deficiencies	E63	Included	Included	
	Sequelae of malnutrition and other nutritional deficiencies <sup>9</sup>	E64	Included	Included	
	Adult osteomalacia due to malnutrition <sup>7</sup>	M833	Excluded	Included	
<b>Cardiovascular diseases</b>					
Acute rheumatic fever <sup>3, 7, 9, 10</sup>	Rheumatic fever without mention of heart involvement	I00	Included	Included	
	Rheumatic chorea	I02	Included	Included	
Chronic rheumatic heart diseases <sup>3, 7, 9, 10</sup>	Rheumatic mitral valve diseases	I05	Included	Included	
	Rheumatic aortic valve diseases	I06	Included	Included	
	Rheumatic tricuspid valve diseases	I07	Included	Included	
	Multiple valve diseases	I08	Included	Included	
	Other rheumatic heart diseases	I09	Included	Included	
<b>Otitis media</b>					
Otitis media <sup>3, 9</sup>	Nonsuppurative otitis media	H65	Included	Included	
	Suppurative and unspecified otitis media <sup>10</sup>	H66	Included	Included	
	Otitis media in diseases classified elsewhere	H67	Included	Included	
<b>Dermatological conditions</b>					
Skin infections <sup>3, 7, 9, 10</sup>	Staphylococcal scalded skin syndrome	L00	Included	Included	
	Impetigo	L01	Included	Included	

Main category & subcategory	Principal diagnosis/external cause of injury	ICD-10-AM 8th Edition	Age 0-14	Age 15-24	Note
	Cutaneous abscess, furuncle and carbuncle	L02	Included	Included	
	Cellulitis	L03	Included	Included	
	Acute lymphadenitis	L04	Included	Included	
	Pilonidal cyst	L05	Included	Included	
	Other local infections of skin and subcutaneous tissue	L08	Included	Included	
	Hordeolum and other deep inflammation of eyelid	H000	Included	Included	
	Blepharitis	H010	Included	Included	
	Abscess, furuncle and carbuncle of nose	J340	Included	Included	
	Pyogenic granuloma	L980	Included	Included	
Dermatitis and eczema <sup>7, 9</sup>	Atopic dermatitis	L20	Included	Included	
	Seborrhoeic dermatitis	L21	Included	Included	
	Diaper (napkin) dermatitis	L22	Included	Excluded	
	Allergic contact dermatitis	L23	Included	Included	
	Irritant contact dermatitis	L24	Included	Included	
	Unspecified contact dermatitis	L25	Included	Included	
	Exfoliative dermatitis	L26	Included	Included	
	Dermatitis due to substances taken internally	L27	Included	Included	
	Lichen simplex chronicus and prurigo	L28	Included	Included	
	Pruritus	L29	Included	Included	
	Other dermatitis	L30	Included	Included	
<b>Diabetes complications</b>					
Diabetes complications <sup>7, 10</sup>	Type 1 diabetes mellitus	E10	Included	Included	
	Type 2 diabetes mellitus	E11	Included	Included	
	Other specified diabetes mellitus	E13	Included	Included	

Main category & subcategory	Principal diagnosis/external cause of injury	ICD-10-AM 8th Edition	Age 0-14	Age 15-24	Note
	Unspecified diabetes mellitus	E14	Included	Included	
	Hypoglycaemia, unspecified	E162	Included	Included	
<b>Kidney, urinary tract infection</b>					
Kidney, urinary tract infection 3, 7, 9	Acute tubulo-interstitial nephritis <sup>10</sup>	N10	Included	Included	>= 5 years old only
	Tubulo-interstitial nephritis, not specified as acute or chronic <sup>10</sup>	N12	Included	Included	>= 5 years old only
	Pyonephrosis <sup>10</sup>	N136	Included	Included	>= 5 years old only
	Acute cystitis	N300	Included	Included	>= 5 years old only
	Cystitis, unspecified <sup>10</sup>	N309	Included	Included	>= 5 years old only
	Urinary tract infection, site not specified	N390	Included	Included	>= 5 years old only
<b>Sexually transmitted infections (STIs)</b>					
Sexually transmitted infections (STIs) <sup>7, 11</sup>	Congenital syphilis	A50	Included	Included	
	Early syphilis	A51	Included	Included	
	Late syphilis	A52	Included	Included	
	Other and unspecified syphilis	A53	Included	Included	
	Gonococcal infection	A54	Included	Included	
	Chlamydial lymphogranuloma (venereum)	A55	Included	Included	
	Other sexually transmitted chlamydial diseases	A56	Included	Included	
	Chancroid	A57	Included	Included	
	Granuloma inguinale	A58	Included	Included	
	Trichomoniasis	A59	Included	Included	
	Anogenital herpesviral (herpes simplex) infection	A60	Included	Included	
	Other predominantly sexually transmitted diseases, NEC	A63	Included	Included	
	Unspecified sexually transmitted disease	A64	Included	Included	

Main category & subcategory	Principal diagnosis/external cause of injury	ICD-10-AM 8th Edition	Age 0-14	Age 15-24	Note
	Reiter's disease	M023	Included	Included	
	Nonspecific urethritis	N341	Included	Included	
<b>Vaccine-preventable diseases</b>					
Influenza and related pneumonia, meningitis	Influenza due to certain identified influenza virus*	J09	Included	Included	*No H5N1 case in NZ, most are H1N1
	Influenza due to other identified influenza virus <sup>3, 9, 10</sup>	J10	Included	Included	
	Influenza, virus not identified <sup>3, 9, 10</sup>	J11	Included	Included	
	Pneumonia due to streptococcus pneumoniae <sup>3, 7, 9, 10</sup>	J13	Included	Included	
	Pneumonia due to Haemophilus influenzae <sup>3, 7, 9, 10</sup>	J14	Included	Included	
	Haemophilus meningitis <sup>3, 9, 10</sup>	G000	Included	Included	
Tetanus <sup>3, 7, 9, 10</sup>	Tetanus neonatorum	A33	Included	Excluded	
	Obstetrical tetanus	A34	Included	Included	
	Other tetanus	A35	Included	Included	
Diphtheria <sup>3, 7, 9, 10</sup>	Diphtheria	A36	Included	Included	
Whooping cough <sup>3, 7, 9, 10</sup>	Whooping cough due to Bordetella pertussis	A370	Included	Included	
	Whooping cough due to Bordetella parapertussis	A371	Included	Included	
	Whooping cough due to other Bordetella species	A378	Included	Included	
	Whooping cough, unspecified	A379	Included	Included	
Poliomyelitis <sup>3, 7, 9, 10</sup>	Acute poliomyelitis	A80	Included	Included	
Varicella <sup>10</sup>	Varicella meningitis	B010	Included	Included	
	Varicella encephalitis	B011	Included	Included	
	Varicella pneumonia	B012	Included	Included	
	Varicella with other complications	B018	Included	Included	
	Varicella without complication	B019	Included	Included	
Measles <sup>3, 7, 9, 10</sup>	Measles complicated by encephalitis	B050	Included	Included	

Main category & subcategory	Principal diagnosis/external cause of injury	ICD-10-AM 8th Edition	Age 0-14	Age 15-24	Note
	Measles complicated by meningitis	B051	Included	Included	
	Measles complicated by pneumonia	B052	Included	Included	
	Measles complicated by otitis media	B053	Included	Included	
	Measles with intestinal complications	B054	Included	Included	
	Measles with other complications	B058	Included	Included	
	Measles without complication	B059	Included	Included	
Rubella <sup>3, 7, 9, 10</sup>	Rubella (German measles)	B06	Included	Included	
	Congenital rubella syndrome	P350	Included	Included*	*Lifetime impacts of the condition
	Rubella arthritis	M014	Included	Included	
Hepatitis A <sup>11</sup>	Hepatitis A with hepatic coma	B150	Included	Included	
	Hepatitis A without hepatic coma	B159	Included	Included	
Hepatitis B <sup>3, 7, 9</sup>	Acute hepatitis B with delta-agent (coinfection) with hepatic coma	B160	Included	Included	
	Acute hepatitis B with delta-agent (coinfection) without hepatic coma	B161	Included	Included	
	Acute hepatitis B without delta-agent with hepatic coma	B162	Included	Included	
	Acute hepatitis B without delta-agent and without hepatic coma	B169	Included	Included	
Hepatitis C <sup>11, 12</sup>	Acute hepatitis C	B171	Included	Included	
Chronic viral hepatitis <sup>3, 7, 9-12</sup>	Chronic viral hepatitis B with delta-agent	B180	Included	Included	
	Chronic viral hepatitis B without delta-agent	B181	Included	Included	
	Chronic viral hepatitis C	B182	Included	Included	
Mumps <sup>3, 7, 9-11</sup>	Mumps orchitis	B260	Included	Included	

Main category & subcategory	Principal diagnosis/external cause of injury	ICD-10-AM 8th Edition	Age 0-14	Age 15-24	Note
	Mumps meningitis	B261	Included	Included	
	Mumps encephalitis	B262	Included	Included	
	Mumps pancreatitis	B263	Included	Included	
	Mumps with other complications	B268	Included	Included	
	Mumps without complication	B269	Included	Included	
Tuberculosis <sup>3, 9</sup>	Respiratory tuberculosis, bacteriologically and histologically confirmed	A15	Included	Included	
	Respiratory tuberculosis, not confirmed bacteriologically or histologically	A16	Included	Included	
	Tuberculosis of nervous system	A17	Included	Included	
	Tuberculosis of other organs	A18	Included	Included	
	Miliary tuberculosis	A19	Included	Included	
<b>Meningococcal infection</b>					
Meningococcal infection <sup>3, 9</sup>	Meningococcal meningitis	A390	Included	Included	
	Waterhouse-Friderichsen syndrome	A391	Included	Included	
	Acute meningococcaemia	A392	Included	Included	
	Chronic meningococcaemia	A393	Included	Included	
	Meningococcaemia, unspecified	A394	Included	Included	
	Meningococcal heart disease	A395	Included	Included	
	Other meningococcal infections	A398	Included	Included	
	Meningococcal infection, unspecified	A399	Included	Included	
<b>Epilepsy</b>					
Epilepsy	Epilepsy <sup>7, 10</sup>	G40	Included	Included	
	Status epilepticus <sup>7, 10</sup>	G41	Included	Included	

Main category & subcategory	Principal diagnosis/external cause of injury	ICD-10-AM 8th Edition	Age 0-14	Age 15-24	Note
	Eclampsia <sup>7, 10</sup>	O15	Included	Included	
	Febrile convulsions <sup>3, 7, 9</sup>	R560	Excluded	Excluded	
	Other and unspecified convulsions <sup>7, 10</sup>	R568	Included	Included	
<b>Other non-injury conditions</b>					
Other non-injury conditions	Sepsis due to streptococcus pneumoniae <sup>7</sup>	A403	Included	Included	
	Osteomyelitis <sup>3, 9</sup>	M86	Included	Included	
	Viral meningitis <sup>3, 9</sup>	A87	Included	Included	
	Meningitis in bacterial diseases classified elsewhere <sup>3, 9</sup>	G01	Included	Included	
	Meningitis in other infectious and parasitic diseases classified elsewhere <sup>3, 9</sup>	G02	Included	Included	
	Meningitis due to other and unspecified causes <sup>3, 9</sup>	G03	Included	Included	
	Viral infection of unspecified site <sup>3, 9</sup>	B34	Included	Included	
<b>Injury and poisoning<sup>9, 12, 13*</sup></b>	All injuries, apart from injuries diagnosed as T780–T789 (adverse effects, NEC), or T80–T88, T983 (complications of treatment) or injuries due to the external causes of Y40–Y59, Y60–Y69, Y70–Y82, Y83–Y84, Y88, Y95 (adverse effects of treatment) or X58, X59, Y86, Y899 (unspecified external causes) or Y10–Y34, Y872 (intention undetermined)	S00–T98	Included	Included	*Modified
<b>Unintentional injuries</b>					
Unintentional injuries <sup>4*</sup>	Transport accidents	V010–V899, V910–V919, V930–V978, V98, V99, Y850, Y859			*Modified
	Falls	W00–W19			

Main category & subcategory	Principal diagnosis/external cause of injury	ICD-10-AM 8th Edition	Age 0-14	Age 15-24	Note
	Fires and thermal causes	X00–X19			
	Drowning	W65–W74, V900–V909, V920–V929			
	Poisoning (accidental)	X40–X49			
	Mechanical force (inanimate)	W20–W49			
	Animal-related injuries	W53–W598, W610–W619, X20–X278, X29			
	Overexertion and strenuous	X50			
	Other unintentional injuries	V00, W50–W52, W60, W64, W75–W79, W80–W84, W85–W99, X28, X30–X39, X51–X57			
<b>Intentional injuries</b>					
Intentional injuries <sup>4</sup>	Intentional self-harm	X60–X84, Y870			
	Assault	X85–X99, Y0000–Y0909, Y871, Y3501–Y369, Y890, Y891			



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