National Institute for Health and Care Excellence

Draft

Fever in under 5s

[A] Evidence review for signs and symptoms predicting Kawasaki disease

NICE guideline <number>

Evidence review

August 2019

Draft for Consultation

These evidence reviews were developed by the NICE Guideline Updates Team

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ISBN:

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Signs and symptoms predicting Kawasaki disease

Review question

In children with fever, what symptoms and signs or combinations of symptoms and signs are predictive of Kawasaki disease?

Introduction

Kawasaki disease is a rare but potentially serious cause of fever in children under 5. The NICE guideline on fever in under 5s covers the assessment and early management of fever with no obvious cause in children aged under 5. The aim of the guideline update was to review the evidence and update recommendations on identifying children who may go on to be diagnosed with Kawasaki disease.

Typical Kawasaki disease is diagnosed when fever is present for 5 days or longer and at least 4 out of 5 principal features are present (American Heart Association criteria, McCrindle 2017). For the purpose of this guideline, we use the term 'incomplete' Kawasaki disease for a clinical diagnosis of Kawasaki disease when fewer than 4 principal features are present. The term 'atypical' Kawasaki disease is also used in the evidence base, and this term is retained in the evidence tables (appendix E) when it was used in the primary studies.

PICO table

Population	The included population depends on study design: • Cohort studies: Studies on children presenting with fever will be included. • Case-control studies: Studies on children diagnosed with Kawasaki disease (cases) vs control children not diagnosed with Kawasaki disease will be included (irrespective of whether children explicitly do or do not have fever on presentation). • Case series: Case series of children diagnosed with Kawasaki disease (irrespective of whether children explicitly do or do not have fever on presentation). Studies on children under the age of 5 will be included in the review. Studies including older children (under 18) will also be included if these include some children under the age of 5: these studies will be considered as indirect evidence.
Index test (signs and symptoms)	Clinical signs/symptoms at presentation consistent with the pathophysiology of Kawasaki disease. Including but not limited to: • Irritability • Reduced perfusion: cold, pale or cyanotic digits of the hands and/or feetTachycardia out of proportion to the degree of fever (as defined by the study) • Duration of fever • Persistent fever (5 days or more) • Bilateral conjunctival injection without exudate • Photophobia • Anterior uveitis

	• Headache • Neck stiffness • Cracked/fissured, red lips • Strawberry tongue • Injected lips • Injected pharynx • Cough • Cervical lymphadenopathy (swollen on one or both sides and tender and/or >1.5 cm in diameter) • Polymorphous rash: • Perineal erythema and desquamation • Macular, morbilliform or targetoid skin lesions of the trunk and extremities • Psoriasiform eruption • Inflammation and/or crust formation around the Bacille Calmette-Guérin (BCG) scar • Gallop rhythm • Added heart sounds • Muffled heart tones • Fusiform aneurysms of the brachial arteries palpable or visible in the axillae • Abdominal pain • Diarrhoea • Vomiting • Decreased intake • Joint pain • Arthritis • Indurated oedema of hands and/or feet • Diffuse erythema of palms and/or soles • Sheet-like desquamation that begins in the periungual region of the hands and/or feet • Linear nail creases (Beau's lines)
Reference standard	• Diagnosis of classic Kawasaki disease using the diagnostic criteria described by the American Heart Association in McCrindle 2017. • Diagnosis of incomplete (atypical) Kawasaki disease using the diagnostic criteria described by the American Heart Association in McCrindle 2017. • Diagnosis of Kawasaki disease with coronary artery aneurysm confirmed by imaging
Outcomes	**Accuracy of risk factors at detecting Kawasaki disease:** • Diagnostic yield (percentage of cases with sign/symptom) and the mean time at which these signs/symptoms appeared relative to the onset of illness and then disappeared • Sensitivity of each sign/symptom and sensitivity of specified combinations of signs/symptoms • Specificity of each sign/symptom and specificity of specified combinations of signs/symptoms • Positive likelihood ratio of each sign/symptom and positive likelihood ratio of specified combinations of signs/symptoms • Negative likelihood ratio of each sign/symptom and negative likelihood ratio of specified combinations of signs/symptoms

Methods and process

This evidence review was developed using the methods and process described in Developing NICE guidelines: the manual (2018). Methods specific to this review question are described in the review protocol in appendix A and the methods appendix (appendix B).

Declarations of interest were recorded according to NICE's 2018 declarations of interest policy.

Clinical evidence

A systematic search was carried out for this review question to identify diagnostic accuracy studies, case series and systematic reviews of these studies, which found 2,701 references (see appendix C for literature search strategy). Based on title and abstract, 2,569 references were excluded and 132 references were ordered for screening based on their full texts.

Of the 132 references screened as full texts, 65 references were included based on their meeting the inclusion criteria specified in the review protocol (appendix A). All 65 included studies were case series. One study (Loh 2019) also presented case-control data. In addition to these studies, we added one of two studies that was used in the previous 2013 version of the guidelines (Huang 2006). This study met our inclusion criteria for this current update but the other did not as it was a case-series from outside Europe with fewer than 100 participants. Therefore, the total number of studies included in this evidence review was 66. The clinical evidence study selection is presented as a diagram in appendix D.

Meta-analysis was not appropriate for the case series included in this review question because there was a very high degree of heterogeneity across studies; the committee noted that the percentage of people with a particular sign or symptom was likely to be affected by geographical location, type of setting and the methods used to collect data (which was largely retrospective and identified from case notes). Therefore, the raw data was used to inform committee discussions and is presented in the GRADE profiles in appendix F. Medians and interquartile ranges were calculated to give an overall impression of the data for each symptom and these data are presented in Table 3: Principal symptoms. The number of signs and symptoms present was also included, as the committee agreed that this provided some useful information on combinations of symptoms that might be predictive of an eventual diagnosis, and combinations of symptoms were included in the review protocol.

We created a separate table of data for each sign or symptom. If data were available, we presented it separately for typical Kawasaki disease and incomplete Kawasaki disease. If a study did not have this data, we presented the data for all cases of Kawasaki disease together (typical and incomplete). With a view to reducing heterogeneity and assessing for indirectness caused by regional variation in clinical practice and genetics, data was further subdivided by region: UK data, Europe (not UK) and outside Europe.

Applications of GRADE methodology has not been developed for use with non-comparative studies; therefore a modified approach was applied using the GRADE framework (for details see Appendix B).

For the full evidence tables and GRADE profiles for included studies, please see appendix E and appendix F.

Excluded studies

See Appendix G for a list of references for excluded studies, with reasons for exclusion.

Summary of clinical studies included in the evidence review

Table 1: Case series

Study	Sample size	Setting	Location	Definition of Kawasaki disease
Advani 2019	542	Hospital	Indonesia	Typical and atypical Kawasaki disease using AHA criteria
Bai 2017	383	Hospital	China	Diagnosis of Kawasaki disease according to the Japanese Circulation Society Joint Working Group (Japan)
Baker 2009	198	Hospital	USA and Canada	Typical and incomplete Kawasaki disease using AHA criteria
Bal 2014	106	Hospital	USA	Typical and incomplete Kawasaki disease using AHA criteria
Behmadi 2019	176	Hospital	Iran	Diagnosis of Kawasaki disease. No diagnostic criteria provided.
Boudiaf 2016	133	Hospital	Algeria	Typical and incomplete Kawasaki disease using AHA criteria
Chang 2014	226	Hospital	Taiwan	Typical (complete) Kawasaki disease: fever for at least 5 days and at least 4 of the 5 principal criteria
Chen 2016	351	Hospital	Taiwan	Diagnosis of Kawasaki disease. No diagnostic criteria provided.
Ebbeson 2004	124	Hospital	Canada	Typical and incomplete Kawasaki disease using the criteria as described by Han et al. 2000 (Canada)
Fabi 2018	302	Hospital	Italy	Typical and incomplete Kawasaki disease using AHA criteria
Falcini 2007	266	Hospital	Italy	Diagnosis of Kawasaki disease. No diagnostic criteria provided.
Falcini 2012	228	Hospital	Turkey, Brazil and Italy	Diagnosis of Kawasaki disease. No diagnostic criteria provided.
Gamez-Gonzalez 2013	214	Hospital	Mexico	Typical and incomplete Kawasaki disease using AHA criteria
Garrido-Garcia 2017	399	Hospital	Mexico	Typical (complete) Kawasaki disease: fever for at least 5 days and at least 4 of the 5 principal criteria as described by the AHA Atypical (incomplete) Kawasaki disease: fever for at least 5 days and 2 to 3 principal criteria + coronary involvement as described by the AHA
Generini 1997	73	Hospital	Italy	Diagnosis of Kawasaki disease according to the Kawasaki Disease Research Committee (Japan)

Study	Sample size	Setting	Location	Definition of Kawasaki disease
Ghelani 2012	203	Hospital	USA	Typical and incomplete Kawasaki disease using AHA criteria
Giannouli 2013	86	Hospital	Greece	Typical and incomplete Kawasaki disease using AHA criteria
Gorrab 2016	146	Hospital	Canada (North African origin)	Diagnosis of Kawasaki disease. No diagnostic criteria provided.
Hu 2019	293	Hospital	Taiwan	Typical and incomplete Kawasaki disease using AHA criteria
Huang 2006[1]	768	Hospital	Japan	Diagnosis of Kawasaki disease according to the Kawasaki Disease Research Committee (Japan)
Jaggi 2018	135	Hospital	USA	Typical and incomplete Kawasaki disease using AHA criteria
Jun 2015	355	Hospital	South Korea	Typical and incomplete Kawasaki disease using AHA criteria
Jun 2017	146	Hospital	South Korea	Typical and incomplete Kawasaki disease using AHA criteria
Kil 2017	615	Hospital	South Korea	Typical and incomplete Kawasaki disease using AHA criteria
Kim 2017	14916	Hospital	South Korea	Diagnosis of Kawasaki disease. No diagnostic criteria provided
Kim 2018	329	Hospital	South Korea	Typical and incomplete Kawasaki disease using AHA criteria
Kim 2009	153	Hospital	South Korea	Typical and incomplete Kawasaki disease using AHA criteria Atypical (incomplete) Kawasaki disease was defined as meeting less than 4 clinical criteria, irrespective of echocardiography findings
Kubota 2008	136	Hospital	Japan	Diagnosis of Kawasaki disease according to the Kawasaki Disease Research Committee (Japan)
Lee 2016	145	Hospital	Taiwan	Typical and atypical Kawasaki disease using AHA criteria
Li 2019	200	Hospital	China	Typical and incomplete Kawasaki disease using AHA criteria
Liu 2012	145	Hospital	Taiwan	Typical and incomplete Kawasaki disease using AHA criteria
Loh 2019	279	Hospital	Singapore	Typical and incomplete Kawasaki disease using AHA criteria
Manlhiot 2012	955	Hospital	Canada	Typical and incomplete Kawasaki disease using AHA criteria
Maric 2015	111	Hospital	Croatia	Typical and incomplete Kawasaki disease using AHA criteria
Martins 2018	63	Hospital	Portugal	Typical and incomplete Kawasaki disease using AHA criteria
Minich 2007	562	Hospital	Canada and USA	Typical and incomplete Kawasaki disease using AHA criteria

Study	Sample size	Setting	Location	Definition of Kawasaki disease
Moore 2014	104	Primary care	UK	Diagnosis of Kawasaki disease. No diagnostic criteria provided.
Nomura 2012	207	Hospital	Japan	Diagnosis of Kawasaki disease according to Japanese Circulation Society Joint Working Group.
Patel 2013	314	Hospital	Denmark	Discharge diagnosis of Kawasaki disease according to ICD-10.
Peng 2019	1420	Hospital	China	Typical and incomplete Kawasaki disease using AHA criteria
Perrin 2009	59	Hospital	France	Typical and incomplete Kawasaki disease using AHA criteria
Piao 2010	735	Hospital	China	Diagnostic criteria for Kawasaki disease in the 7th International Kawasaki Disease Symposium (Japan) – further information not provided.
Ruan 2013	1209	Hospital	China	Typical and incomplete Kawasaki disease using AHA criteria
Sanchez-Maubens 2016	399	Hospital	Spain	Typical and incomplete Kawasaki disease using AHA criteria
Sehgal 2015	312	Hospital	USA	Typical and incomplete Kawasaki disease using AHA criteria
Shamsizadeh 2014	104	Hospital	Iran	Typical and incomplete Kawasaki disease using AHA criteria and American Academy of Paeditrics guideline.
Shiozawa 2014	100	Hospital	Japan	Diagnosis of Kawasaki disease according to the Kawasaki Disease Research Committee (Japan)
Sittiwangkul 2011	170	Hospital	Thailand	Typical and incomplete Kawasaki disease using AHA criteria
Sittiwangkul 2013	208	Hospital	Thailand	Typical and incomplete Kawasaki disease using AHA criteria
Sonobe 2007	15857	Hospital	Japan	Diagnosis of Kawasaki disease. No diagnostic criteria provided.
Stemberger 2018	110	Hospital	Croatia	Typical and incomplete Kawasaki disease using AHA criteria
Sun 2018	1008	Hospital	China	Typical and incomplete Kawasaki disease using AHA criteria
Tacke 2014	319	Hospital	The Netherlands	Typical and incomplete Kawasaki disease using AHA criteria
Tajima 2015	100	Hospital	Japan	Typical and incomplete Kawasaki disease using AHA criteria
Tang 2016	1016	Hospital	China	Typical and incomplete Kawasaki disease using AHA criteria
Teng 2012	351	Hospital	Taiwan	Diagnosis of Kawasaki disease. No diagnostic criteria provided.

Study	Sample size	Setting	Location	Definition of Kawasaki disease
Tewelde 2014	105	Hospital	USA	Typical and incomplete Kawasaki disease using ICD-9 codes.
Uehara 2010	15524	Hospital	Japan	Diagnosis of Kawasaki disease according to the Kawasaki Disease Research Committee (Japan)
Wang 2009	243	Hospital	USA	Typical and incomplete Kawasaki disease using AHA criteria
Yellen 2010	195	Hospital	USA	Typical and incomplete Kawasaki disease using AHA criteria
Yoon 2016	239	Hospital	South Korea	Typical and incomplete Kawasaki disease using AHA criteria
Yun 2011	121	Hospital	South Korea	Typical and incomplete Kawasaki disease using AHA criteria
Zhang 2016	518	Hospital	Mongolia	Diagnosis of Kawasaki disease according to the Kawasaki Disease Research Committee (Japan)
Zhang 2012	577	Hospital	China	Diagnosis of Kawasaki disease according to the Kawasaki Disease Research Committee (Japan)
Zhu 2015	231	Hospital	China	Diagnosis of Kawasaki disease according to the Kawasaki Disease Research Committee (Japan)
Abbreviations AHA: American Heart Association, ICD: International Classification of Disease 1. This study is one of two studies that formed the basis of the previous 2013 recommendations				

Table 2: Case-control studies

Study	Sample size	Setting	Location	Definition of Kawasaki disease
Loh 2019	279	Hospital	Singapore	Typical and incomplete Kawasaki disease using AHA criteria

See appendix E for full evidence tables.

Summary of findings and quality assessment

The table below summarises the results for the principal symptoms of Kawasaki disease, as identified in the American Heart Association diagnostic criteria.

Data for other signs and symptoms, or symptoms that are sub-categorisations of the principal symptoms (e.g. oral changes – strawberry tongue) are presented in the GRADE profiles in appendix F.

Table 3: Principal symptoms

Symptom	Kawasaki disease definition	Location	Age	Number of studies	% with Symptom Median (IQR) across studies	Quality
Conjunctival injection (During course of illness)	Typical	Europe (not UK)	All	3	92.8% (91.6 to 93.1)	Very low
		Outside Europe	All	12	96.1% (95.0 to 97.0)	Very low
	Incomplete	Europe (not UK)	All	3	65.0% (46.1 to 71.9)	Very low
		Outside Europe	All	12	74.1% (67.5 to 85.2)	Very low
	Typical + Incomplete	Europe (not UK)	All	6	83.4% (71.3 to 92.1)	Very low
		Outside Europe	<1 year	7	84.4% (55.3 to 89.9)	Very low
			>1 year	7	81.4% (77.4 to 88.2)	Very low
			All	28	88.7% (83.1 to 91.8)	Very low
Conjunctival injection (Primary care)	Typical + Incomplete	UK	All	1	31.1% (-)	Very low
Conjunctival injection (at time of emergence of symptoms other than fever)		Outside Europe	<2 year	1	45.1% (-)	Very low
			>2 year	1	16.3% (-)	Very low
Conjunctival injection (day 5 of fever)		Outside Europe	<2 year	1	84.3% (-)	Very low
			>2 year	1	85.7% (-)	Very low
Oral changes (During course of illness)	Typical	Europe (not UK)	All	3	98.4% (96.7 to 99.2)	Very low
		Outside Europe	All	12	96.1% (93.2 to 97.6)	Very low
	Incomplete	Europe (not UK)	All	3	65.0% (64.3 to 73.4)	Very low
		Outside Europe	All	10	63.6% (57.9 to 67.9)	Very low

Symptom	Kawasaki disease definition	Location	Age	Number of studies	% with Symptom Median (IQR) across studies	Quality
	Typical + Incomplete	Europe (not UK)	All	5	94.5% (87.5 to 96.6)	Very low
		Outside Europe	<1 year	6	65.2% (47.4 to 81.8)	Very low
			>1 year	6	77.0% (76.2 to 78.3)	Very low
			All	27	89.7% (83.8 to 94.3)	Very low
Oral changes (at time of emergence of symptoms other than fever)	Typical + Incomplete	Outside Europe	<2 year	1	29.4% (-)	Very low
		Outside Europe	>2 year	1	12.2% (-)	Very low
Oral changes (day 5 of fever)	Typical + Incomplete	Outside Europe	<2 year	1	64.7% (-)	Very low
		Outside Europe	>2 year	1	73.5% (-)	Very low
Changes in extremities (During course of illness)	Typical	Europe (not UK)	All	3	78.2% (71.9 to 87.8)	Very low
		Outside Europe	All	10	88.3% (84.3 to 90.8)	Very low
	Incomplete	Europe (not UK)	All	3	30.0% (21.8 to 42.2)	Very low
		Outside Europe	All	11	33.3% (22.4 to 40.0)	Very low
	Typical + Incomplete	Europe (not UK)	All	5	82.0% (77.4 to 85.7)	Very low
		Outside Europe	<1 year	5	36.4% (26.9 to 46.2)	Very low
			>1 year	5	61.5% (50.0 to 73.8)	Very low
			All	24	72.6% (65.9 to 83.4)	Very low
Changes in Extremities (at time of emergence of symptoms other than fever)	Typical + Incomplete	Outside Europe	<2 year	1	19.6% (-)	Very low
		Outside Europe	>2 year	1	6.1% (-)	Very low
Changes in Extremities (day 5 of fever)	Typical + Incomplete	Outside Europe	<2 year	1	62.7% (-)	Very low
		Outside Europe	>2 year	1	61.2% (-)	Very low
Polymorphous rash (During course of illness)	Typical	Europe (not UK)	All	3	93.6% (87.1 to 94.3)	Very low
		Outside Europe	All	12	93.5% (89.4 to 97.5)	Very low
	Incomplete	Europe (not UK)	All	3	65.0% (64.3 to 70.4)	Very low
		Outside Europe	All	13	66.2% (48.3 to 68.6)	Very low

Symptom	Kawasaki disease definition	Location	Age	Number of studies	% with Symptom Median (IQR) across studies	Quality
	Typical + Incomplete	Europe (not UK)	All	6	88.0% (84.7 to 92.9)	Very low
		Outside Europe	<1 year	13	86.3% (74.5 to 89.7)	Very low
			>1 year	6	81.8% (79.1 to 89.1)	Very low
			All	26	85.5% (79.4 to 93.3)	Very low
Polymorphous rash (Primary care)	Typical + Incomplete	UK	All	1	63.5% (-)	Very low
Polymorphous rash (at time of emergence of symptoms other than fever)		Outside Europe	<2 year	1	78.4% (-)	Very low
			>2 year	1	24.5% (-)	Very low
Polymorphous rash (day 5 of fever)		Outside Europe	<2 year	1	92.2% (-)	Very low
			>2 year	1	79.6% (-)	Very low
Cervical lymphadenopathy (During course of illness)	Typical	Europe (not UK)	All	3	43.6% (41.1 to 58.2)	Very low
		Outside Europe	All	11	63.0% (41.6 to 72.7)	Very low
	Incomplete	Europe (not UK)	All	3	30.0% (28.7 to 44.6)	Very low
		Outside Europe	All	12	31.4% (20.8 to 38.8)	Very low
	Typical + Incomplete	Europe (not UK)	All	6	53.0% (31.7 to 71.8)	Very low
		Outside Europe	<1 year	7	24.6% (14.9 to 30.9)	Very low
			>1 year	7	57.3% (33.7 to 63.1)	Very low
			All	27	59.4% (38.2 to 68.3)	Very low
Cervical lymphadenopathy (primary care)	Typical + Incomplete	UK	All	1	35.1% (-)	Very low
Cervical lymphadenopathy (at time of emergence of symptoms other than fever)	Typical + Incomplete	Outside Europe	<2 year	1	35.3% (-)	Very low
			>2 year	1	75.5% (-)	Very low
	Typical + Incomplete	Outside Europe	<2 year	1	64.7% (-)	Very low

Symptom	Kawasaki disease definition	Location	Age	Number of studies	% with Symptom Median (IQR) across studies	Quality
Cervical lymphadenopathy (day 5 of fever)			>2 year	1	93.9% (-)	Very low
2 or more principal symptoms (at time of emergence of symptoms other than fever)	Typical + Incomplete	Outside Europe	<2 year	1	54.9% (-)	Very low
			>2 year	1	16.3% (-)	Very low

Table 4: Numbers of symptoms

Symptom	Kawasaki disease definition	Location	Age	Number of studies	% with Symptom (95% CI)	Quality
0 symptoms[1] (at first presentation	Typical + Incomplete	UK	All	1 (Moore 2014)	28.4% (19.4 to 38.5)	Very low
1 symptom[1] (at first presentation)	Typical + Incomplete	UK	All	1 (Moore 2014)	39.2% (28.9 to 50.6)	Very low
2 symptoms[1] (at first presentation)	Typical + Incomplete	UK	All	1 (Moore 2014)	9.5% (4.7 to 18.3)	Very low
2 or more principal symptoms[2] (at time of emergence of symptoms other than fever)	Typical + Incomplete	Outside Europe	<1 year	1 (Shiozawa 2014)	54.9% (41.4 to 67.7)	Very low
			>1 year	1 (Shiozawa 2014)	16.3% (8.5 to 29.0)	Very low
3 symptoms[1] (at first presentation)	Typical + Incomplete	UK	All	1 (Moore 2014)	6.8% (2.9 to 14.9)	Very low
4 symptoms[1] (at first presentation)	Typical + Incomplete	UK	All	1 (Moore 2014)	5.4% (2.1 to 13.1)	Very low
5 symptoms[1] (at first presentation)	Typical + Incomplete	UK	All	1 (Moore 2014)	5.4% (2.1 to 13.1)	Very low
6 symptoms[1] (at first presentation)	Typical + Incomplete	UK	All	1 (Moore 2014)	1.4% (0.2 to 7.3)	Very low

Symptom	Kawasaki disease definition	Location	Age	Number of studies	% with Symptom (95% CI)	Quality
7 symptoms[1] (at first presentation)	Typical + Incomplete	UK	All	1 (Moore 2014)	1.4% (0.2 to 7.3)	Very low
8 symptoms[1] (at first presentation)	Typical + Incomplete	UK	All	1 (Moore 2014)	2.7% (0.7 to 9.3)	Very low
1.Symptoms included Rash, Lymphadenopathy, Conjunctivitis, Red, dry, or cracked lips, Strawberry tongue, Redness in mouth, Peeling skin, Red palms/soles, Oedema 2. Symptoms included conjunctival injection, oral changes, polymorphous rash, changes in extremities, cervical lymphadenopathy						

Table 5: Case-control evidence

No. of studies	Study design	Sample size	Sensitivity (95%CI)	Specificity (95%CI)	Effect size (95%CI)	Quality
BCG scar activation Typical + incomplete Kawasaki disease, Outside Europe, all ages[3]						
1 (Loh 2019)	Case control	370	0.43 (0.37, 0.49)	0.90 (0.82, 0.95)	LR+ 4.31 (2.29, 8.14)	Very low
					LR- 0.64 (0.56, 0.72)	Very low

See appendix F for full GRADE profiles.

Economic evidence

Standard health economics filters were applied to the clinical search strategy to identify relevant cost–utility analyses. In total, 129 references were returned; all could be confidently excluded on screening of titles and abstracts. No original health economic analysis was undertaken for this guideline update, as it was agreed that any recommendations made were highly unlikely to result in a substantial resource impact.

The committee's discussion of the evidence

Interpreting the evidence

The outcomes that matter most

The question focused on identifying signs and symptoms that could predict which children would eventually receive a diagnosis of Kawasaki disease. Children suspected as having a possible diagnosis of Kawasaki disease are referred to secondary care for further assessment, which may include blood tests and cardiac imaging. A definitive diagnosis of Kawasaki disease is made by a paediatrician in secondary care and is outside the scope of this review, because the NICE guideline on Fever in under 5s is limited to the initial and assessment and management of children presenting with fever.

The consequences of missing a possible diagnosis early in the course of disease (a 'false negative' result) are potentially serious. If clinicians in primary care fail to identify possible cases this is likely to delay or prevent onward referral to secondary care for definitive diagnosis and treatment. Untreated disease or disease treated late in the course of the illness may result in coronary artery abnormalities, which are associated with long-term morbidity and mortality. Correctly identifying children with Kawasaki disease (a 'true positive' result) early in the course of disease would lead to prompt referral and treatment, which would reduce the risk of long-term complications. Children incorrectly identified as potentially having Kawasaki disease when in fact they do not (a 'false positive' result) may receive unnecessary referral and testing, which might be invasive and distressing for children and their parents and carers and may also delay correct diagnosis and treatment. However, given the serious consequences of missing cases of Kawasaki disease, the committee agreed that the sensitivity of signs and symptoms should be valued over their specificity, and that it was important to identify cases early, even at the expense of referring children without the disease for further assessment.

The quality of the evidence

The evidence identified for this review was all very low quality. The case series identified were exclusively retrospective, and based on reviews of case notes, or in some cases, questionnaires asking about previous signs and symptoms. This was a major limitation as recall of signs and symptoms may be poor and subject to bias and recording of signs and symptoms in case notes is likely to be variable and incomplete. The majority of evidence was reported during the whole time-course of the disease, and so was of limited applicability to the review question, which focused on signs and symptoms early in the course of the illness which predicted an eventual diagnosis. The committee noted that data for typical and incomplete cases together was in fact most applicable to the review question, as complications of Kawasaki disease occur in both typical and incomplete disease, and the treatment is the same irrespective of presentation.

Two case series provided evidence on signs and symptoms earlier in the illness. Shiozawa et al. (2013) was a Japanese case series providing data on signs and symptoms relative to

the onset of fever based on information from parental interviews, family doctors and hospital records. There were limited details on how the data had been collected. The committee also noted that Kawasaki disease was much more common in Japan and other areas of Asia than in the UK, and was likely to be diagnosed earlier. This study was therefore of limited applicability to the UK population and was rated down for indirectness.

Moore et al. (2014) reported a case series from UK primary care and so was more directly applicable to the review question. However, the committee was concerned that the method of selection of cases might be unrepresentative of typical cases of Kawasaki disease because inclusion in the study required a 'convincing diagnosis' of Kawasaki disease.

One case–control study was identified, which assessed the diagnostic accuracy of BCG scar activation. The committee agreed that the study was of very low quality, as assessment of the BCG scar differed between case and control groups. They also noted that the study was of limited applicability to the UK, as BCG vaccination is not routinely offered. The committee estimated that fewer than 20% of children with Kawasaki disease were in the groups offered BCG vaccination. No other evidence on the specificity of signs and symptoms was available, which was a major limitation of the evidence.

The target population for the review was children under 5 presenting with fever. Most of the evidence included in the review was from case-series of children with a diagnosis of Kawasaki disease, but fever was usually not an explicit inclusion criterion in the studies. However, the committee agreed that presence of fever was always required for a Kawasaki disease diagnosis and so all of the participants in the included studies were likely to have fever.

Benefits and harms

The principal features of Kawasaki disease specified in the American Heart Association guideline for diagnosis are conjunctival injection, cervical lymphadenopathy, polymorphous rash, oral changes and changes to the hands and feet. The committee agreed that these features should be used by clinicians when assessing children for possible Kawasaki disease as they are present in the majority of patients at some point in the course of disease. Therefore, combinations of these features together with a fever lasting at least 5 days are likely to be reasonably specific, based on the committee's experience (children without Kawasaki disease are unlikely to exhibit the same symptoms). Data on other symptoms were reviewed, but these symptoms were either present in a small number of people with Kawasaki disease, were inconsistent across studies, or were thought likely to be non-specific to Kawasaki disease and so were not incorporated into recommendations.

Evidence from early in the course of disease (before a definitive diagnosis was made) showed that the number of children experiencing each principal symptom was lower. A Japanese study (Shiozawa et al., 2013) found that the number of children experiencing each of the principal symptoms 5 days after the onset of fever was between 60% and 95% for each of the principal symptoms in those aged under and over 2 years. The committee considered that these data might in fact overestimate the number of children experiencing symptoms at this stage of the disease in the UK because incomplete Kawasaki disease is more common in the UK population, and, based on the experience of the committee, features are less obvious.

A UK study (Moore et al., 2014) found that most children had either 0 or 1 symptoms (which could include fever) at first presentation in primary care. Consequently, the committee agreed that clinicians should think about Kawasaki disease when fever was present for 5 days or longer, even when no additional features are present. The committee decided to list the principal features of Kawasaki disease in the recommendation without specifying a particular number of features that must be present to prompt further action. This was

because no evidence on the sensitivity and specificity of combinations of symptoms early in the disease course was available, and clinicians should use their clinical judgment when deciding on the likelihood of Kawasaki disease as a differential diagnosis and the need for onward referral. The recommendation does not distinguish between typical and incomplete Kawasaki disease because the committee felt that this distinction was not useful when assessing for possible Kawasaki disease – the actions required by clinicians is the same irrespective of whether typical or incomplete disease is suspected. Complications in the absence of prompt treatment are possible with both typical and incomplete disease.

A research recommendation was made for a prognostic diagnostic accuracy study on the signs and symptoms that are predictive of a subsequent diagnosis of Kawasaki disease, which would allow a more specific recommendation to be made in future updates of this guidance.

The committee recommended that clinicians should ask about the presence of the principal features of Kawasaki disease in children with a fever lasting 5 days or longer since the onset of fever because, based on the experience of the committee some of the features may have appeared and disappeared at the time of assessment.

When data for children with typical and incomplete disease was reported for children under the age of 1 year separately, the proportion of children with each of the principal symptoms was lower for some principal features in the under-1 age-group. This is consistent with the experience of the committee that under-1s are more often diagnosed with incomplete disease, and with a UK-based epidemiological study that the committee was aware of (see 'other factors the committee took into account'). The committee agreed that it was important that healthcare professionals were aware that under-1s typically present with fewer symptoms than older children, as this is something that the committee thought was not widely known and should increase the index of suspicion for Kawasaki disease in this group, even when few or no additional features are present.

Cost effectiveness and resource use

The committee agreed that the new recommendations are unlikely to lead to a substantial resource impact: recommendations elsewhere in this guideline already categorise fever of 5 days or longer on its own as an 'amber' feature that should prompt non-paediatric practitioners to refer to specialist care for further assessment or provide 'safety-netting' advice. Therefore, the updated recommendations will not create an additional population of children who were not previously considered at risk, so they are unlikely to cause a dramatic increase in referrals. Moreover, even though more children may be referred to specialist care, the costs of false-positive referrals are small compared with the costs of false-negative failures to identify children with Kawasaki disease, which is more likely to be associated with mortality, morbidity and lifelong cardiological care if it is not identified promptly.

Other factors the committee took into account

The committee was aware of a recent UK and Ireland based epidemiological study (Tulloh et al, 2018) on Kawasaki disease which did not match the criteria specified in the review protocol (as it did not report signs or symptoms) but provided useful information on the incidence of Kawasaki disease in the UK population. The study showed that the incidence of Kawasaki disease in the UK has risen in the last 10 years. The incidence of incomplete or atypical Kawasaki disease was highest in children under 1 year, and the rate of coronary artery aneurysm was highest in this group. The study also suggested, in keeping with epidemiological studies in other countries, that the incidence of Kawasaki disease is higher in children of black or Asian ethnicity. The committee highlighted this an equality issue, as clinicians might not know that Kawasaki disease is more common in these groups and so it

might be under diagnosed. However, a specific recommendation on this was not made on this issue as the focus of the review was to identify signs and symptoms predictive of Kawasaki disease.

The 2013 version of the NICE guideline on Fever in under 5s included a description of the features of Kawasaki disease. The committee decided to simplify the descriptions of additional features other than a fever of 5 days or longer and make them consistent with the diagnostic criteria for Kawasaki disease specified by the American heart association (McCrindle 2017).

Appendices

Appendix A – Review protocol

Review protocol for signs and symptoms predicting Kawasaki disease

Field (based on PRISMA-P	Content
Review question	In children with fever, what symptoms and signs or combinations of symptoms and signs are predictive of Kawasaki disease?
Type of review question	Diagnostic
Objective of the review	To determine what symptoms and signs or combination of symptoms and signs are predictive of Kawasaki disease in children with fever.
Eligibility criteria – population/disease/condition/issue/domain	The included population depends on study design: • Cohort studies: Studies on children presenting with fever will be included. • Case-control studies: Studies on children diagnosed with Kawasaki disease (cases) vs control children not diagnosed with Kawasaki disease will be included (irrespective of whether children explicitly do or do not have fever on presentation). • Case series: Case series of children diagnosed with Kawasaki disease (irrespective of whether children explicitly do or do not have fever on presentation).

	Studies on children under the age of 5 will be included in the review. Studies including older children (under 18) will also be included if there include some children under the age of 5: these studies will be considered as indirect evidence.
Eligibility criteria – intervention	Clinical signs/symptoms at presentation consistent with the pathophysiology of Kawasaki disease. Including but not limited to: • Appearance at the foot of the bed: ➢ Irritability Circulation and pulse: ➢ Reduced perfusion: cold, pale or cyanotic digits of the hands and/or feet

	➢ Tachycardia out of proportion to the degree of fever as defined by the study • Fever (≥38^{O}C or ≥100.4F): ➢ Duration of fever ➢ Persistent fever (5 days or more) despite antibiotics • Eyes: ➢ Bilateral conjunctival injection without exudate ➢ Photophobia ➢ Anterior uveitis • Aseptic meningitis: ➢ Headache ➢ Neck stiffness • Oral (mucositis): ➢ Cracked/fissured, red lips ➢ Strawberry tongue ➢ Injected lips ➢ Injected pharynx ➢ Cough • Cervical lymphadenopathy (swollen on one or both sides and tender and/or >1.5 cm in diameter) • Skin changes: ➢ Polymorphous rash: - Perineal erythema and desquamation - Macular, morbilliform or targetoid skin lesions of the trunk and extremities ➢ Psoriasiform eruption ➢ Inflammation and/or crust formation around the Bacille Calmette-Guérin (BCG) scar • Heart and large arteries: ➢ Gallop rhythm ➢ Added heart sounds ➢ Muffled heart tones ➢ Fusiform aneurysms of the brachial arteries palpable or visible in the axillae • Gastrointestinal: ➢ Abdominal pain ➢ Diarrhoea ➢ Vomiting ➢ Decreased intake • Joints:

	➢ Joint pain ➢ Arthritis • Extremity changes: ➢ Indurated oedema of hands and/or feet ➢ Diffuse erythema of palms and/or soles ➢ Sheet-like desquamation that begins in the periungual region of the hands and/or feet ➢ Linear nail creases (Beau's lines)
Eligibility criteria – reference standard	• Diagnosis of classic Kawasaki disease using the diagnostic criteria described by the American Heart Association in McCrindle 2017. • Diagnosis of incomplete (atypical) Kawasaki disease using the diagnostic criteria described by the American Heart Association in McCrindle 2017. • Diagnosis of Kawasaki disease with coronary artery aneurysm confirmed by imaging
Outcomes	Accuracy of risk factors at detecting Kawasaki disease: • Diagnostic yield of signs/symptoms and the mean time at which these signs/symptoms appeared relative to the onset of illness and then disappeared • Sensitivity of each sign/symptom and sensitivity of specified combinations of signs/symptoms • Specificity of each sign/symptom and specificity of specified combinations of signs/symptoms • Positive likelihood ratio of each sign/symptom and positive likelihood ratio of specified combinations of signs/symptoms • Negative likelihood ratio of each sign/symptom and negative likelihood ratio of specified combinations of signs/symptoms
Eligibility criteria – study design	• Diagnostic accuracy studies (cohort, cross sectional and case-control). • Case series
Other inclusion/exclusion criteria	Exclusion • Non-English language studies

	• Studies that do not include any children under 5 years of age. However, if we do not find any studies that include children under 5 years of age, then we will include studies with children over the age of 5 years but under the age of 18. • For case series, studies will be excluded if they do not meet the following sample size requirements: ○ From the UK, sample size >1 patient; from Europe, sample size ≥50 patients; from the rest of the world, sample size ≥100 patients.
Sub-group analysis	• Children under 1 year of age. • Ethnicity.
Selection process – duplicate screening/selection/analysis	10% of the abstracts will be reviewed by two reviewers, with any disagreements will be resolved by discussion or, if necessary, a third independent reviewer. If meaningful disagreements are found between the different reviewers, a further 10% of the abstracts will be reviewed by two reviewers, with this process continuing until agreement is achieved between the two reviewers. From this point, the remaining abstracts will be screened by a single reviewer.
Data management (software)	See Appendix B.
Information sources – databases and dates	**Sources to be searched** • Clinical searches – Medline, Medline in Process, Medline EPub Ahead of Print, Embase, Cochrane CDSR, CENTRAL, DARE (legacy records) and HTA. • Economic searches – Medline, Medline in Process, Medline EPub Ahead of Print, Embase, NHS EED (legacy records) and HTA, with economic evaluations and quality of life filters applied where appropriate. **Supplementary search techniques** • None identified **Limits**

	• Studies reported in English • No Study design limits will be set • Animal studies will be excluded from the search results • Conference abstracts will be excluded from the search results • Date limited from January 1st 2007 to present
Identify if an update	N/A
Author contacts	Guideline updates team
Highlight if amendment to previous protocol	This is a new protocol.
Search strategy – for one database	For details please see appendix C of relevant chapter.
Data collection process – forms/duplicate	A standardised evidence table format will be used and published as appendix D (clinical evidence tables) or H (economic evidence tables).
Data items – define all variables to be collected	For details please see evidence tables in appendix D (clinical evidence tables) or H (economic evidence tables).
Methods for assessing bias at outcome/study level	Study checklists were used to critically appraise individual studies. For details please see appendix H of Developing NICE guidelines: the manual The following checklist will be used: Risk of bias of diagnostic accuracy studies will be assessed using QUADAS-2

	Risk of bias for case series will be assessed using the Joanna Briggs institute critical appraisal checklist for case series. The risk of bias across all available evidence will be evaluated for each outcome using an adaptation of the 'Grading of Recommendations Assessment, Development and Evaluation (GRADE) toolbox' developed by the international GRADE working group http://www.gradeworkinggroup.org/
Criteria for quantitative synthesis	For details please see section 6 of Developing NICE guidelines: the manual.
Methods for quantitative analysis – combining studies and exploring (in)consistency	For details please see the methods and process section of the main file.
Meta-bias assessment – publication bias, selective reporting bias	For details please see section 6.2 of Developing NICE guidelines: the manual.
Confidence in cumulative evidence	For details please see sections 6 and 9 of Developing NICE guidelines: the manual.
Rationale/context – what is known	For details please see the introduction to the evidence review in the main file.
Describe contributions of authors and guarantor	A multidisciplinary committee https://www.nice.org.uk/guidance/indevelopment/gid-ng10138 developed the evidence review. The committee was convened by the NICE guidelines updates team and chaired by Pramod Mainie in line with section 3 of Developing NICE guidelines: the manual. Staff from NICE undertook systematic literature searches, appraised the evidence, conducted meta-analysis and cost-effectiveness analysis where appropriate, and drafted the evidence review in collaboration with the committee. For details please see Developing NICE guidelines: the manual.

Sources of funding/support	The NICE Guideline Updates Team is an internal team within NICE.
Name of sponsor	The NICE Guideline Updates Team is an internal team within NICE.
Roles of sponsor	The NICE Guideline Updates Team is an internal team within NICE.
PROSPERO registration number	

1

2

Appendix B – Methods

Priority screening

The review made use of the priority screening functionality with the EPPI-reviewer systematic reviewing software. This uses a machine learning algorithm (specifically, an SGD classifier) to take information on features (1, 2 and 3 word blocks) in the titles and abstract of papers marked as being 'includes' or 'excludes' during the title and abstract screening process, and re-orders the remaining records from most likely to least likely to be an include, based on that algorithm. This re-ordering of the remaining records occurs every time 25 additional records have been screened.

Research is currently ongoing as to what are the appropriate thresholds where reviewing of abstract can be stopped, assuming a defined threshold for the proportion of relevant papers it is acceptable to miss on primary screening. For this evidence review 'includes' were identified throughout the screening process, and therefore all records in the database were examined.

Incorporating published systematic reviews

For all review questions where a literature search was undertaken looking for a particular study design, systematic reviews containing studies of that design were also included. All included studies from those systematic reviews were screened to identify any additional relevant primary studies not found as part of the initial search.

Quality assessment

Individual systematic reviews were quality assessed using the ROBIS tool, with each classified into one of the following three groups:

- High quality – It is unlikely that additional relevant and important data would be identified from primary studies compared to that reported in the review, and unlikely that any relevant and important studies have been missed by the review.
- Moderate quality – It is possible that additional relevant and important data would be identified from primary studies compared to that reported in the review, but unlikely that any relevant and important studies have been missed by the review.
- Low quality – It is possible that relevant and important studies have been missed by the review.

Each individual systematic review was also classified into one of three groups for its applicability as a source of data, based on how closely the review matches the specified review protocol in the guideline. Studies were rated as follows:

- Fully applicable – The identified review fully covers the review protocol in the guideline.
- Partially applicable – The identified review fully covers a discrete subsection of the review protocol in the guideline (for example, some of the factors in the protocol only).
- Not applicable – The identified review, despite including studies relevant to the review question, does not fully cover any discrete subsection of the review protocol in the guideline.

Using systematic reviews as a source of data

If systematic reviews were identified as being sufficiently applicable and high quality, and were identified sufficiently early in the review process (for example, from the surveillance review or early in the database search), they were used as the primary source of data, rather than extracting information from primary studies. The extent to which this was done depended on the quality and applicability of the review, as defined in Table 6. When systematic reviews were used as a source of primary data, and unpublished or additional data included in the review which is not in the primary studies was also included. Data from these systematic reviews was then quality assessed and presented in GRADE/CERQual tables as described below, in the same way as if data had been extracted from primary studies. In questions where data was extracted from both systematic reviews and primary studies, these were cross-referenced to ensure none of the data had been double counted through this process.

Table 6: Criteria for using systematic reviews as a source of data

Quality	Applicability	Use of systematic review
High	Fully applicable	Data from the published systematic review were used instead of undertaking a new literature search or data analysis. Searches were only done to cover the period of time since the search date of the review.
High	Partially applicable	Data from the published systematic review were used instead of undertaking a new literature search and data analysis for the relevant subsection of the protocol. For this section, searches were only done to cover the period of time since the search date of the review. For other sections not covered by the systematic review, searches were undertaken as normal.
Moderate	Fully applicable	Details of included studies were used instead of undertaking a new literature search. Full-text papers of included studies were still retrieved for the purposes of data analysis. Searches were only done to cover the period of time since the search date of the review.
Moderate	Partially applicable	Details of included studies were used instead of undertaking a new literature search for the relevant subsection of the protocol. For this section, searches were only done to cover the period of time since the search date of the review. For other sections not covered by the systematic review, searches were undertaken as normal.

Diagnostic test accuracy evidence

Diagnostic test accuracy (DTA) data are classified as any data in which a feature – be it a symptom, a risk factor, a test result or the output of some algorithm that combines many such features – is observed in some people who have the condition of interest at the time of the test and some people who do not. Such data either explicitly provide, or can be manipulated to generate, a 2x2 classification of true positives and false negatives (in people who, according to the reference standard, truly have the condition) and false positives and true negatives (in people who, according to the reference standard, do not).

The ‘raw’ 2x2 data can be summarised in a variety of ways. Those that were used for decision making in this guideline are as follows:

- **Positive likelihood ratios** describe how many times more likely positive features are in people with the condition compared to people without the condition. Values greater than 1 indicate that a positive result makes the condition more likely.
  - LR^+ = (TP/[TP+FN])/(FP/[FP+TN])
- **Negative likelihood ratios** describe how many times less likely negative features are in people with the condition compared to people without the condition. Values less than 1 indicate that a negative result makes the condition less likely.
  - LR^- = (FN/[TP+FN])/(TN/[FP+TN])
- **Sensitivity** is the probability that the feature will be positive in a person with the condition.
  - sensitivity = TP/(TP+FN)
- **Specificity** is the probability that the feature will be negative in a person without the condition.
  - specificity = TN/(FP+TN)
- **Positive predictive values** describe the probability that a person with a positive screening test has the disease.
  - PPV = TP/ (TP+FP)
- **Negative predictive values** describe probability that a person with a negative screening test doesn't have the disease.
  - NPV = TN/(TN+FN)

The following schema, adapted from the suggestions of Jaeschke et al. (1994), was used to interpret the likelihood ratio findings from diagnostic test accuracy reviews.

Table 7: Interpretation of likelihood ratios

Value of likelihood ratio	Interpretation
LR ≤ 0.1	**Very large** decrease in probability of disease
0.1 < LR ≤ 0.2	**Large** decrease in probability of disease
0.2 < LR ≤ 0.5	**Moderate** decrease in probability of disease
0.5 < LR ≤ 1.0	**Slight** decrease in probability of disease
1.0 < LR < 2.0	**Slight** increase in probability of disease
2.0 ≤ LR < 5.0	**Moderate** increase in probability of disease
5.0 ≤ LR < 10.0	**Large** increase in probability of disease
LR ≥ 10.0	**Very large** increase in probability of disease

The schema above has the effect of setting a minimal important difference for positive likelihoods ratio at 2, and a corresponding minimal important difference for negative likelihood ratios at 0.5. Likelihood ratios (whether positive or negative) falling between these thresholds were judged to indicate no meaningful change in the probability of disease.

Quality assessment

Individual studies were quality assessed using the QUADAS-2 tool, which contains four domains: patient selection, index test, reference standard, and flow and timing. Each individual study was classified into one of the following three groups:

- Low risk of bias – The true effect size for the study is likely to be close to the estimated effect size.

- Moderate risk of bias – There is a possibility the true effect size for the study is substantially different to the estimated effect size.
- High risk of bias – It is likely the true effect size for the study is substantially different to the estimated effect size.

Each individual study was also classified into one of three groups for directness, based on if there were concerns about the population, index features and/or reference standard in the study and how directly these variables could address the specified review question. Studies were rated as follows:

- Direct – No important deviations from the protocol in population, index feature and/or reference standard.
- Partially indirect – Important deviations from the protocol in one of the population, index feature and/or reference standard.
- Indirect – Important deviations from the protocol in at least two of the population, index feature and/or reference standard.

Methods for combining diagnostic test accuracy evidence

Meta-analysis of diagnostic test accuracy data was conducted with reference to the Cochrane Handbook for Systematic Reviews of Diagnostic Test Accuracy (Deeks et al. 2010).

Where applicable, diagnostic syntheses were stratified by:

- Presenting symptomatology (features shared by all participants in the study, but not all people who could be considered for a diagnosis in clinical practice).
- The reference standard used for true diagnosis.

Where five or more studies were available for all included strata, a bivariate model was fitted using the `mada` package in R v3.4.0, which accounts for the correlations between positive and negative likelihood ratios, and between sensitivities and specificities. Where sufficient data were not available (2-4 studies), separate independent pooling was performed for positive likelihood ratios, negative likelihood ratios, sensitivity and specificity, using Microsoft Excel. This approach is conservative as it is likely to somewhat underestimate test accuracy, due to failing to account for the correlation and trade-off between sensitivity and specificity (see Deeks 2010).

Random-effects models (der Simonian and Laird) were fitted for all syntheses, as recommended in the Cochrane Handbook for Systematic Reviews of Diagnostic Test Accuracy (Deeks et al. 2010).

In any meta-analyses where some (but not all) of the data came from studies at high risk of bias, a sensitivity analysis was conducted, excluding those studies from the analysis. Results from both the full and restricted meta-analyses are reported. Similarly, in any meta-analyses where some (but not all) of the data came from indirect studies, a sensitivity analysis was conducted, excluding those studies from the analysis.

Modified GRADE for diagnostic test accuracy evidence

GRADE has not been developed for use with diagnostic studies; therefore a modified approach was applied using the GRADE framework.

The choice of primary outcome for decision making was determined by the committee and GRADE assessments were undertaken using the appropriate method from those listed below.

In all cases, following completion of the GRADE table, the downstream effects of these tests on patient- important outcomes were considered. This could be done explicitly during committee deliberations and reported as part of the discussion section of the review detailing the likely consequences of true positive, true negative, false positive and false negative test results. Alternatively, in reviews where a decision model is being carried (for example, as part of an economic analysis), these consequences may be incorporated here instead.

Using likelihood ratios as the primary outcomes

GRADE assessments were only undertaken for positive and negative likelihood ratios, as the thresholds used to assess imprecision were based on these outcomes, but results for sensitivity and specificity are also presented alongside those data.

Evidence from diagnostic accuracy studies was initially rated as high-quality, and then downgraded according to the standard GRADE criteria (risk of bias, inconsistency, imprecision and indirectness) as detailed in Table 8 below.

The committee were consulted to set 2 clinical decision thresholds for each measure: the likelihood ratio above (or below for negative likelihood ratios) which a test would be recommended, and a second below (or above for negative likelihood ratios) which a test would be considered of no clinical use. These were used to judge imprecision (see below).If the committee were unsure which values to pick, then the default values of 2 for LR+ and 0.5 for LR- were used based on **Error! Reference source not found.**, with the line of no effect a s the second clinical decision line in both cases.

Table 8: Rationale for downgrading quality of evidence for diagnostic questions using likelihood ratio measures.

GRADE criteria	Reasons for downgrading quality
Risk of bias	Not serious: If less than 33.3% of the weight in a meta-analysis came from studies at moderate or high risk of bias, the overall outcome was not downgraded. Serious: If greater than 33.3% of the weight in a meta-analysis came from studies at moderate or high risk of bias, the outcome was downgraded one level. Very serious: If greater than 33.3% of the weight in a meta-analysis came from studies at high risk of bias, the outcome was downgraded two levels. Outcomes meeting the criteria for downgrading above were not downgraded if there was evidence the effect size was not meaningfully different between studies at high and low risk of bias.
Indirectness	Not serious: If less than 33.3% of the weight in a meta-analysis came from partially indirect or indirect studies, the overall outcome was not downgraded. Serious: If greater than 33.3% of the weight in a meta-analysis came from partially indirect or indirect studies, the outcome was downgraded one level. Very serious: If greater than 33.3% of the weight in a meta-analysis came from indirect studies, the outcome was downgraded two levels. Outcomes meeting the criteria for downgrading above were not downgraded if there was evidence the effect size was not meaningfully different between direct and indirect studies.

GRADE criteria	Reasons for downgrading quality
Inconsistency	Concerns about inconsistency of effects across studies, occurring when there is unexplained variability in the treatment effect demonstrated across studies (heterogeneity), after appropriate pre-specified subgroup analyses have been conducted. This was assessed using the I^2 statistic. N/A: Inconsistency was marked as not applicable if data on the outcome was only available from one study. Not serious: If the I^2 was less than 33.3%, the outcome was not downgraded. Serious: If the I^2 was between 33.3% and 66.7%, the outcome was downgraded one level. Very serious: If the I^2 was greater than 66.7%, the outcome was downgraded two levels. Outcomes meeting the criteria for downgrading above were not downgraded if there was evidence the effect size was not meaningfully different between studies with the smallest and largest effect sizes.
Imprecision	If the 95% confidence interval for a positive likelihood ratio spanned a single LR+ clinical decision threshold (e.g. 2), the outcome was downgraded one level, as the data were deemed to be consistent with a meaningful increase in risk and no meaningful predictive value. Similarly, negative likelihood ratios that spanned a single LR- decision threshold (e.g. 0.5) led to downgrading for serious imprecision. Any likelihood ratios that spanned both the LR specific clinical decision threshold and the line of no effect were downgraded twice, as suffering from very serious imprecision. Outcomes meeting the criteria for downgrading above were not downgraded if the confidence interval was sufficiently narrow that the upper and lower bounds would correspond to clinically equivalent scenarios.

The quality of evidence for each outcome was upgraded if either of the following conditions were met:

- Data showed an effect size sufficiently large that it could not be explained by confounding alone.
- All plausible residual confounding is likely to increase our confidence in the effect estimate. Publication bias

Publication bias was assessed in two ways. First, if evidence of conducted but unpublished studies was identified during the review (e.g. conference abstracts or protocols without accompanying published data), available information on these unpublished studies was reported as part of the review. Secondly, where 10 or more studies were included as part of a single meta-analysis, a funnel plot was produced to graphically assess the potential for publication bias.

Case series for diagnostic accuracy questions

For the purpose of this review ‘diagnostic’ case series are defined as studies reporting the proportion of participants with a diagnosis of the condition of interest (as defined by the reference standard) who had a positive test result (or who exhibited a particular sign or symptom).

Quality assessment

The Joanna Briggs Institute checklists were used for diagnostic case series. Studies were assessed on the methods of participant recruitment, retention and outcome measurement (as appropriate), with each individual study classified into one of the following three groups:

- Low risk of bias – The true result for the study is likely to be close to the estimated result
- Moderate risk of bias – There is a possibility the true result for the study is substantially different to the estimated result.
- High risk of bias – It is likely the true result for the study is substantially different to the estimated result.

Each individual study was also classified into one of three groups for directness, based on if there were concerns about the population or outcomes in the study and how directly these variables could address the specified review question. Studies were rated as follows:

- Direct – No important deviations from the protocol in population, intervention, comparator and/or outcomes.
- Partially indirect – Important deviations from the protocol in one of the population, intervention, comparator and/or outcomes.
- Indirect – Important deviations from the protocol in at least two of the population, intervention, comparator and/or outcomes.

Methods for combining case series

Meta-analysis was considered inappropriate for the case series presented in this review due to the degree of expected heterogeneity between studies. No data was available for construction of a 2 by 2 table to enable a bivariate diagnostic accuracy meta-analysis to be performed.

Modified GRADE for diagnostic case series

Applications of GRADE methodology has not been developed for use with non-comparative studies; therefore a modified approach was applied using the GRADE framework.

Evidence from case series was not combined in a meta-analysis, but given the large volume of data, it was considered helpful to group the data in the GRADE profile and provide an overall GRADE rating for each sign/symptom for each subgroup or sub analysis specified by the committee.

Consistent with the approach for diagnostic accuracy evidence, the quality of evidence was initially rated as 'high' and then downgraded as follows:

Table 9: Rationale for downgrading quality of evidence for diagnostic case series

GRADE criteria	Reasons for downgrading quality
Risk of bias	Not serious: If less than 33.3% of the total participants came from studies at moderate or high risk of bias Serious: If greater than 33.3% of the total participants came from studies at moderate or high risk of bias Very serious: If greater than 33.3% of the total participants came from studies at high risk of bias
Indirectness	Not serious: If less than 33.3% of the total participants came from partially indirect or indirect studies Serious: If greater than 33.3% of the total participants came from partially indirect or indirect studies Very serious: If greater than 33.3% of the total participants came from indirect studies

GRADE criteria	Reasons for downgrading quality
Inconsistency	Concerns about inconsistency occurred when there is unexplained variability in the effect demonstrated across studies (heterogeneity). N/A: Inconsistency was marked as not applicable if data was only available from one study. Not serious: Confidence intervals across studies were overlapping Serious: Confidence intervals across studies were not overlapping
Imprecision	Not serious: If >33.3% of the studies had >300 participants Serious: If <33.3% of the studies had >300 participants Very serious: If <33.3% of the studies had >100 participants

The quality of evidence for each outcome was upgraded if either of the following conditions were met:

- If an outcome was downgraded for risk of bias or indirectness, this outcome was upgraded if there was evidence the effect size was not meaningfully different between studies at high and low risk of bias, or between direct and indirect studies.
- If an outcome was downgraded for inconsistency, this outcome was upgraded if there was evidence the effect size was not meaningfully different between studies with the smallest and largest effect sizes.
- If an outcome was downgraded for imprecision, this outcome was upgraded if the confidence interval is sufficiently narrow that the upper and lower bounds would correspond to clinically equivalent scenarios.

Publication bias

If evidence of conducted but unpublished studies was identified during the review (e.g. conference abstracts or protocols without accompanying published data), available information on these unpublished studies was reported as part of the review.

Appendix C– Literature search strategies

A single systematic search was conducted for the question within this review on 16th May 2019. The following databases were searched MEDLINE, MEDLINE in Process, MEDLINE e pub Ahead of print, and Embase, (all via the Ovid platform), the Cochrane Library databases (Wiley) and the DARE database (CRD platform).

The MEDLINE strategy is presented below. This was translated for the other databases.

1 Mucocutaneous Lymph Node Syndrome/
2 MCLS.tw.
3 (mucocutan* adj4 lymph*).tw.
4 kawasaki*.tw.
5 or/1-4
6 exp Infant/
7 (infan* or neonat* or newborn* or baby or babies).tw.
8 exp Child/
9 (child* or toddler* or boy* or girl*).tw.
10 (preschool* or pre-school*).tw.
11 exp Pediatrics/
12 (pediatric* or paediatric* or peadiatric*).tw.
13 or/6-12
14 exp "signs and symptoms"/ or Symptom Assessment/
15 (sign* or symptom* or complain* or indicator* or predict*).tw.
16 (clinical adj4 (manifestation* or feature* or finding* or aspect* or marker* or recogni* or identif*)).tw.
17 (presenting adj4 (feature* or finding* or factor* or aspect* or marker*)).tw.
18 presentation*.tw.
19 (physical adj4 (manifestation* or characteristic* or feature* or finding* or aspect* or marker*)).tw.
20 or/14-19
21 (sensitiv: or predictive value:).mp. or accurac:.tw.
22 20 or 21
23 5 and 13 and 22
24 animals/ not humans/
25 23 not 24
26 limit 25 to english language
27 limit 26 to ed=20070101-20190516

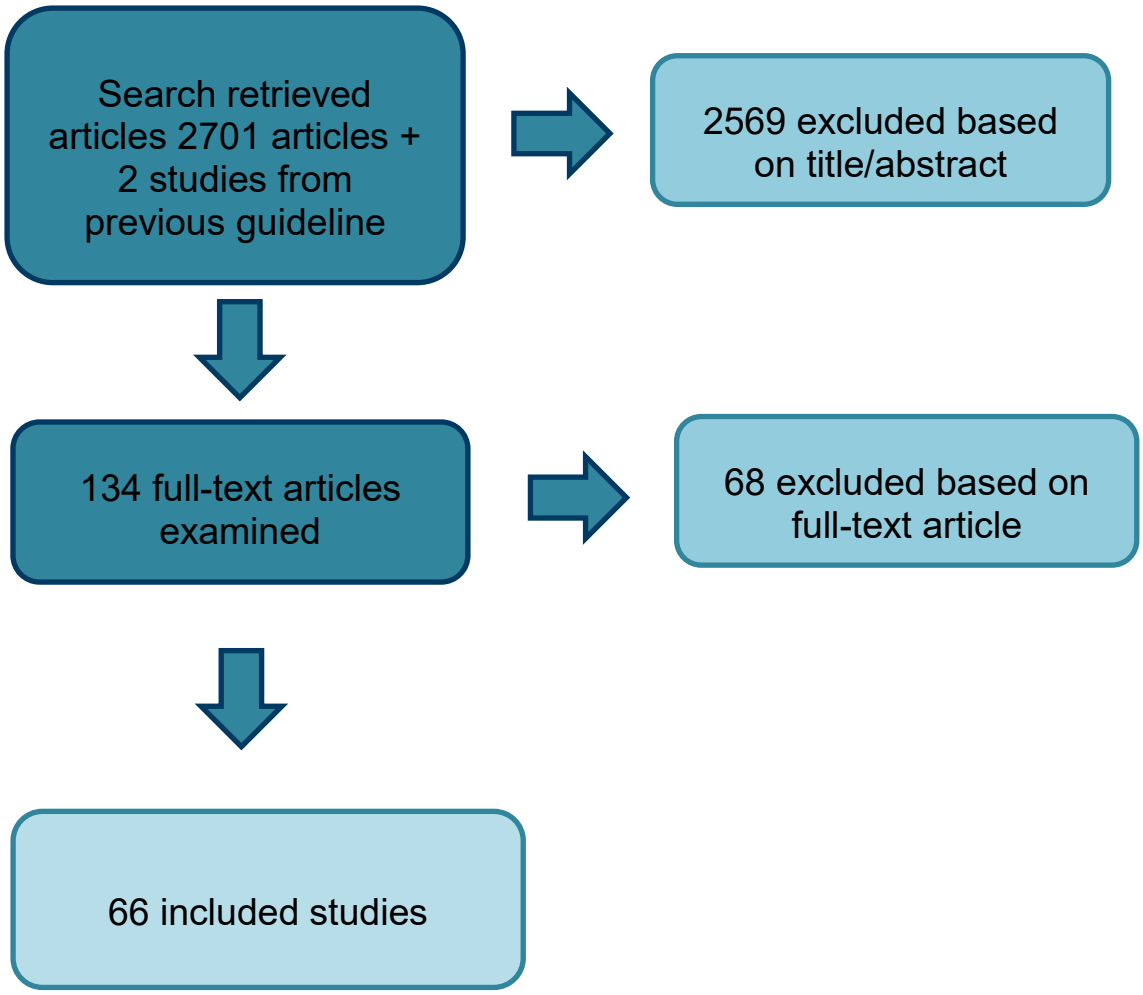
Searches to identify economic evidence were run on 17th May 2019 in MEDLINE, MEDLINE in Process, MEDLINE e pub Ahead of print, Econlit and Embase (all via the Ovid platform), NHS EED and the Health Technology Assessment Database (via the CRD platform). NICE inhouse Economic Evaluation and Quality of Life filters were attached to lines 1 to 27 of the core strategy (lines 1 to 27 of the MEDLINE version shown above) in the MEDLINE and Embase databases. The MEDLINE version of the filters is displayed below.

28 Economics/
29 exp "Costs and Cost Analysis"/
30 Economics, Dental/
31 exp Economics, Hospital/
32 exp Economics, Medical/
33 Economics, Nursing/
34 Economics, Pharmaceutical/
35 Budgets/
36 exp Models, Economic/
37 Markov Chains/
38 Monte Carlo Method/
39 Decision Trees/
40 econom$.tw.
41 cba.tw.
42 cea.tw.
43 cua.tw.
44 markov$.tw.
45 (monte adj carlo).tw.
46 (decision adj3 (tree$ or analys$)).tw.
47 (cost or costs or costing$ or costly or costed).tw.
48 (price$ or pricing$).tw.
49 budget$.tw.
50 expenditure$.tw.
51 (value adj3 (money or monetary)).tw.
52 (pharmacoeconomic$ or (pharmaco adj economic$)).tw.
53 or/28-52

54 "Quality of Life"/
55 quality of life.tw.
56 "Value of Life"/
57 Quality-Adjusted Life Years/
58 quality adjusted life.tw.
59 (qaly$ or qald$ or qale$ or qtime$).tw.
60 disability adjusted life.tw.
61 daly$.tw.
62 Health Status Indicators/
63 (sf36 or sf 36 or short form 36 or shortform 36 or sf thirtysix or sf thirty six or shortform thirtysix or shortform thirty six or short form thirtysix or short form thirty six).tw.
64 (sf6 or sf 6 or short form 6 or shortform 6 or sf six or sfsix or shortform six or short form six).tw.
65 (sf12 or sf 12 or short form 12 or shortform 12 or sf twelve or sftwelve or shortform twelve or short form twelve).tw.
66 (sf16 or sf 16 or short form 16 or shortform 16 or sf sixteen or sfsixteen or shortform sixteen or short form sixteen).tw.
67 (sf20 or sf 20 or short form 20 or shortform 20 or sf twenty or sftwenty or shortform twenty or short form twenty).tw.
68 (euroqol or euro qol or eq5d or eq 5d).tw.
69 (qol or hql or hqol or hrqol).tw.
70 (hye or hyes).tw.
71 health$ year$ equivalent$.tw.
72 utilit$.tw.
73 (hui or hui1 or hui2 or hui3).tw.
74 disutili$.tw.

1	75	rosser.tw.
2	76	quality of wellbeing.tw.
3	77	quality of well-being.tw.
4	78	qwb.tw.
5	79	willingness to pay.tw.
6	80	standard gamble$.tw.
7	81	time trade off.tw.
8	82	time tradeoff.tw.
9	83	tto.tw.
10	84	or/54-83
11		
12		

Appendix D – Clinical evidence study selection



Appendix E – Clinical evidence tables

Advani 2019

Advani 2019	
Bibliographic Reference	Advani, Najib; Santoso, Lucyana Alim; Sastroasmoro, Sudigdo; Profile of Kawasaki Disease in Adolescents: Is It Different? Acta medica Indonesiana; 2019; vol. 51 (no. 1); 42-46

Study details

Study type	Patient records audit
Study details	Study location Indonesia Study setting Hospital Study dates 2003 to 2016 Exclusions Hundreds of cases were excluded because of incomplete information Sources of funding Not mentioned.
Inclusion criteria	Typical and incomplete Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria Incomplete records or different sources of information that have conflicting information.
Sample characteristics	Sample size 542 % Female 39% Average age (variance) Mean 27 months (SD 16)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA

Study arm

	Patients with Kawasaki disease (N = 542)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes

Joanna Briggs critical appraisal checklist for case series
Was the condition measured in a standard, reliable way for all participants included in the case series? Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* No *(Hundreds of patients were excluded because of incomplete data.)* *Did the case series have complete inclusion of participants?* No *(Hundreds of patients were excluded because of incomplete data.)* *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study. Hundreds of patients were excluded because of incomplete data.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Bai 2017

Bai 2017	
Bibliographic Reference	Bai, L.; Feng, T.; Yang, L.; Zhang, Y.; Jiang, X.; Liao, J.; Chen, L.; Feng, X.; Rong, Y.; Li, Y.; Qin, Z.; Qiao, J.; Retrospective analysis of risk factors associated with Kawasaki disease in China; Oncotarget; 2017; vol. 8 (no. 33); 54357-54363

Study details

Study type	Patient records audit
Study details	Study location China Study setting Hospital Study dates 1998 to 2008 Exclusions

Study type	Patient records audit
	None Sources of funding Life Consortium Corporation in Japan
Inclusion criteria	Diagnosis of Kawasaki disease according to the Japanese Circulation Society Joint Working Group (Japan)
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 383 % Female 40% Average age (variance) "Incomplete KD patients' average age was 2.87 ± 2.23 and typical KD patients' average age was 3.01 ± 2.35."
Outcome(s)	Clinical features

Study arm

	Patients with Kawasaki disease (N = 383)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* *This question has not yet been answered.* *Were valid methods used for identification of the condition for all participants included in the case series?* *This question has not yet been answered.* *Did the case series have consecutive inclusion of participants?* Yes *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study)*

Joanna Briggs critical appraisal checklist for case series
Applicability as a source of data Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Baker 2009

Baker 2009	
Bibliographic Reference	Baker, Annette L.; Lu, Minmin; Minich, L. LuAnn; Atz, Andrew M.; Klein, Gloria L.; Korsin, Rosalind; Lambert, Linda; Li, Jennifer S.; Mason, Wilbert; Radojewski, Elizabeth; Vetter, Victoria L.; Newburger, Jane W.; Pediatric Heart Network, Investigators; Associated symptoms in the ten days before diagnosis of Kawasaki disease; The Journal of pediatrics; 2009; vol. 154 (no. 4); 592-595.e2

Study details

Study type	Prospective cohort study
Study details	Study location USA and Canada Study setting Hospital Study dates 2002 to 2004 Exclusions Sources of funding National Institutes of Health, Ciarnanello Family Fund.
Inclusion criteria	Typical and incomplete Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria Fever >10 days
Sample characteristics	Sample size 198 % Female Not provided Average age (variance) Mean approx 3.2 years (SD 2.2)
Outcome(s)	Rates of occurrence of associated symptoms and signs Within 10 days prior to diagnosis

Study arm

	Patients with Kawasaki disease (N = 198)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series?

Joanna Briggs critical appraisal checklist for case series
Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Yes *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* Low *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Bal 2014

Bal 2014	
Bibliographic Reference	Bal, Aswine K.; Prasad, Deepa; Umali Pamintuan, Maria Angela; Mammen-Prasad, Elizabeth; Petrova, Anna; Timing of intravenous immunoglobulin treatment and risk of coronary artery abnormalities in children with Kawasaki disease; Pediatrics and neonatology; 2014; vol. 55 (no. 5); 387-92

Study details

Study type	Patient records audit
Study details	Study location USA Study setting Hospital Study dates 1999 to 2011 Exclusions None Sources of funding

Study type	Patient records audit
	Life Consortium Corporation in Japan
Inclusion criteria	Typical and incomplete Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 106 % Female 37% Average age (variance) For those who received IVIG at ten days or less, mean 3.5 years (SD 2.6). Those who received IVIG treatment over ten days, mean 2.9 (SD 1.7)
Outcome(s)	Clinical features

Study arm

	Patients with Kawasaki disease (N = 106)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Unclear *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study.)* *Applicability as a source of data* Indirectly applicable

Joanna Briggs critical appraisal checklist for case series
(Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Behmadi 2019

Behmadi 2019	
Bibliographic Reference	Behmadi, Maryam; Alizadeh, Behzad; Malek, Abdolreza; Comparison of Clinical Symptoms and Cardiac Lesions in Children with Typical and Atypical Kawasaki Disease; Medical sciences (Basel, Switzerland); 2019; vol. 7 (no. 4)

Study details

Study type	Patient records audit
Study details	Study location Iran Study setting Hospital Study dates 2015 to 2018 Exclusions Some records were excluded because they were incomplete Sources of funding Research Vice Chancellor of Mashhad University of Medical Sciences
Inclusion criteria	Diagnosis of Kawasaki disease. No diagnostic criteria provided.
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 176 % Female 36% Average age (variance) Mean 32.43 (range 2-114)
Outcome(s)	Clinical features

Study arm

	Patients with Kawasaki disease (N = 176)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? No *Was the condition measured in a standard, reliable way for all participants included in the case series?* No *(Diagnostic criteria not provided.)* *Were valid methods used for identification of the condition for all participants included in the case series?*

Joanna Briggs critical appraisal checklist for case series
Yes *Did the case series have consecutive inclusion of participants?* Unclear *Did the case series have complete inclusion of participants?* No *(Some records were excluded because they were incomplete.)* *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Boudiaf 2016

Boudiaf 2016	
Bibliographic Reference	Boudiaf, Houda; Achir, Moussa; The Clinical Profile of Kawasaki Disease in Algerian Children: A Single Institution Experience; Journal of tropical pediatrics; 2016; vol. 62 (no. 2); 139-43

Study details

Study type	Patient records audit
Study details	Study location Algeria Study setting Hospital Study dates 2005 to 2014 Exclusions None Sources of funding Not mentioned
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria

Study type	Patient records audit
Sample characteristics	Sample size 133 % Female 38% Average age (variance) Median 31 months (range 5 to 132 months)
Outcome(s)	Rates of occurrence of the principle criteria for Kawasaki disease according to the AHA Clinical features

Study arm

	Patients with Kawasaki disease (N = 133)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Yes *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(High (retrospective))* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Chang 2014

Chang 2014	
Bibliographic Reference	Chang, Luan-Yin; Lu, Chun-Yi; Shao, Pei-Lan; Lee, Ping-Ing; Lin, Ming-Tai; Fan, Tsui-Yien; Cheng, Ai-Ling; Lee, Wan-Ling; Hu, Jen-Jan; Yeh, Shu-Jen; Chang, Chien-Chih; Chiang, Bor-Luen; Wu, Mei-Hwan; Huang, Li-Min; Viral infections associated with Kawasaki disease; Journal of the Formosan Medical Association = Taiwan yi zhi; 2014; vol. 113 (no. 3); 148-54

Study details

Study type	Patient records audit
Study details	Study location Taiwan Study setting Hospital Study dates 2004 to 2010 Exclusions None Sources of funding Not mentioned
Inclusion criteria	Typical (complete) Kawasaki disease: fever for at least 5 days and at least 4 of the 5 principal criteria
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 226 % Female 41% Average age (variance) Mean 2.07 years (SD 1.76), Median 1.57 years (range 0.12 to 9.43)
Outcome(s)	Clinical features

Study arm

	Patients with Kawasaki disease (N = 226)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Yes

Joanna Briggs critical appraisal checklist for case series
Did the case series have complete inclusion of participants? Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Chen 2016

Chen 2016	
Bibliographic Reference	Chen, J. J.; Ma, X. J.; Liu, F.; Yan, W. L.; Huang, M. R.; Huang, M.; Huang, G. Y.; Epidemiologic features of Kawasaki disease in Shanghai from 2008 Through 2012; Pediatric Infectious Disease Journal; 2016; vol. 35 (no. 1); 7-12

Study details

Study type	Patient records audit
Study details	Study location Taiwan Study setting Hospital Study dates 1997 to 2007 Exclusions None Sources of funding Not mentioned
Inclusion criteria	Diagnosis of Kawasaki disease. No diagnostic criteria provided.
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 351 % Female Not provided

Study type	Patient records audit
	Average age (variance) Not provided
Outcome(s)	Clinical features

Study arm

	Patients with Kawasaki disease (N = 351)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Yes *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Ebbeson 2004

Ebbeson 2004	
Bibliographic Reference	Ebbeson, Regan L.; Riley, Mark R.; Potts, Jim E.; Human, Derek G.; Malleson, Peter N.; Kawasaki disease at British Columbia's Children's Hospital; Paediatrics & child health; 2004; vol. 9 (no. 7); 466-70

Study details

Study type	Patient records audit
Study details	Study location Canada Study setting Hospital Study dates 1992 to 2000 Exclusions None Sources of funding Not provided
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by Han et al. 2000 (Canada)
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 124 % Female 35% Average age (variance) Not provided within the age ranges
Outcome(s)	Rates of occurrence of associated symptoms and signs Rates of occurrence of the principal criteria as described by Han et al. 2000 (Canada)

Study arm

	Patients with Kawasaki disease (N = 124)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Unclear *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes

Joanna Briggs critical appraisal checklist for case series
Were the outcomes or follow up results of cases clearly reported? Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission.)

Fabi 2018

Fabi 2018	
Bibliographic Reference	Fabi, Marianna; Corinaldesi, Elena; Pierantoni, Luca; Mazzoni, Elisa; Landini, Chiara; Bigucci, Barbara; Ancora, Gina; Malaigia, Laura; Bodnar, Tetyana; Di Fazzio, Giorgia; Lami, Francesca; Valletta, Enrico; Cicero, Cristina; Biasucci, Giacomo; Iughetti, Lorenzo; Marchetti, Federico; Sogno Valin, Paola; Amarri, Sergio; Brusa, Sandra; Sprocati, Monica; Maggiore, Giuseppe; Dormi, Ada; Lanzoni, Paolo; Donti, Andrea; Lanari, Marcello; Gastrointestinal presentation of Kawasaki disease: A red flag for severe disease?; PloS one; 2018; vol. 13 (no. 9); e0202658

Study details

Study type	Patient records audit
Study details	Study location Italy Study setting Hospitals Study dates 2000 to 2015 Exclusions None Sources of funding There was no specific funding for this study.
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 302 % Female 40%

Study type	Patient records audit
	Average age (variance) Of those who did not have abdominal manifestations: median 38.8 months (SD 31.6). Of those who did: median 28.4 months (SD 31.7)
Outcome(s)	Rate of occurrence of abdominal manifestations The following gastrointestinal manifestations were considered: vomiting, diarrhoea, abdominal pain, abdominal distension, paralytic ileus, jaundice, pancreatitis and pseudo-obstruction. The presence of vomiting and diarrhea was documented based on standard definition if reported by caregivers and/or directly observed during the acute phase of the hospital stay. Abdominal pain was defined on physical examination using a pain assessment scale appropriate for age [the Face, Legs, Activity, Cry, Consolability scale (FLACC scale), Wong Baker FACES pain rating scale]. Paralytic ileus, obstruction, jaundice and pancreatitis were clinically suspected and confirmed by imaging and laboratory findings, when appropriate. They excluded patients with positive fecal cultures, anatomical malformations and etiologies other than Kawasaki disease from the data analysis.

Study arm

	Patients with Kawasaki disease (N = 302)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Yes *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Study includes children over the age of 5 years.)

Falcini 2007

Falcini 2007	
Bibliographic Reference	Falcini, F.; Calabri, G. B.; Ricci, L.; Simonini, G.; Capannini, S.; Giani, T.; De Martino, M.; Update on Kawasaki disease: The 25 year experience at the "A. Mayer" Children's Hospital, Florence; Italian Journal of Pediatrics; 2007; vol. 33 (no. 1); 32-40

Study details

Study type	Patient records audit
Study details	Study location Hospital Study setting Italy Study dates 1980 to 2007 Exclusions Not mentioned Sources of funding Not mentioned
Inclusion criteria	Diagnosis of Kawasaki disease. No diagnostic criteria provided. There were no diagnostic criteria mentioned in the methods section.
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 266 % Female 39% Average age (variance) Median 26 months (range 2 to 293)
Outcome(s)	Rates of occurance of the principal criteria for Kawasaki disease

Study arm

	Patients with Kawasaki disease (N = 266)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? No *(No diagnostic criteria mentioned in the methods section.)* *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?*

Joanna Briggs critical appraisal checklist for case series
Unclear *Did the case series have complete inclusion of participants?* Unclear *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(No diagnostic criteria mentioned in the methods section. Retrospective study.)* *Applicability as a source of data* Indirectly applicable (Data on signs and symptoms was not collected at first presentation; data was collected during the hospital stay. Some patients were over 5 years of age.)

Falcini 2012

Falcini 2012	
Bibliographic Reference	Falcini, Fernanda; Ozen, Seza; Magni-Manzoni, Silvia; Candelli, Marco; Ricci, Laura; Martini, Giorgia; Cuttica, Ruben J.; Oliveira, Sheila; Calabri, Giovanni Battista; Zulian, Francesco; Pistorio, Angela; La Torre, Francesco; Rigante, Donato; Discrimination between incomplete and atypical Kawasaki syndrome versus other febrile diseases in childhood: results from an international registry-based study; Clinical and experimental rheumatology; 2012; vol. 30 (no. 5); 799-804

Study details

Study type	Patient records audit
Study details	Study location Turkey, Brazil and Italy Study setting Hospital Study dates 2005 to 2007 Exclusions There were 1466 Kawasaki disease cases in the registry. 13 patients were excluded due to insufficient data. 1,225 were excluded due to unexplained reason(s). Sources of funding Not mentioned.
Inclusion criteria	Diagnosis of Kawasaki disease. No diagnostic criteria provided.

Study type	Patient records audit
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 228 % Female 39% Average age (variance) Typical KS, mean 29.6 months (SD 29). Atypical KD, mean 44.6 months (SD 38)
Outcome(s)	Clinical features Rates of occurance of the principal criteria for Kawasaki disease

Study arm

	Patients with Kawasaki disease (N = 228)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* No *(There were 1466 Kawasaki disease cases in the registry. 13 patients were excluded due to insufficient data. 1,225 were excluded due to unexplained reason(s).)* *Did the case series have complete inclusion of participants?* No *(13 patients were excluded due to insufficient data.)* *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* No *(All the data from the 3 sites was grouped together.)* *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study.)* *Applicability as a source of data*

Joanna Briggs critical appraisal checklist for case series
Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Gamez-Gonzalez 2013

Gamez-Gonzalez 2013	
Bibliographic Reference	Gamez-Gonzalez, Luisa Berenise; Murata, Chiharu; Munoz-Ramirez, Mireya; Yamazaki-Nakashimada, Marco; Clinical manifestations associated with Kawasaki disease shock syndrome in Mexican children; European journal of pediatrics; 2013; vol. 172 (no. 3); 337-42

Study details

Study type	Patient records audit
Study details	Study location Mexico Study setting Hospital Study dates 2000 to 2012 Exclusions None Sources of funding Not mentioned
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 214 % Female 37% Average age (variance) Those with shock, median 42 months (IQR 3 to 120). Those without shock, median 23 months (IQR 2 to 186)
Outcome(s)	Clinical features

Study arm

	Patients with Kawasaki disease (N = 212)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes

Joanna Briggs critical appraisal checklist for case series
Were valid methods used for identification of the condition for all participants included in the case series? Yes *Did the case series have consecutive inclusion of participants?* Yes *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Garrido-Garcia 2017

Garrido-Garcia 2017	
Bibliographic Reference	Garrido-Garcia, Luis Martin; Castillo-Moguel, Ariel; Vazquez-Rivera, Mirella; Cravioto, Patricia; Fernando, Galvan; Reaction of the BCG Scar in the Acute Phase of Kawasaki Disease in Mexican Children; The Pediatric infectious disease journal; 2017; vol. 36 (no. 10); e237-e241

Study details

Study type	Patient records audit
Study details	Study location Mexico Study setting Hospital Study dates 1995 to 2015 Exclusions None Sources of funding Not mentioned

Study type	Patient records audit
Inclusion criteria	Typical (complete) Kawasaki disease: fever for at least 5 days and at least 4 of the 5 principal criteria as described by the AHA Atypical (incomplete) Kawasaki disease: fever for at least 5 days and 2 to 3 principal criteria + coronary involvement as described by the AHA
Exclusion criteria	No information about BCG status
Sample characteristics	Sample size 399 % Female 35% Average age (variance) BGC reaction: mean 19.09 months (range 3 to 131 months). No BCG reaction: mean 44.92 months (range 2 to 200 months)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA Rate of occurrence of BCG scar reaction

Study arm

	Patients with Kawasaki disease (N = 399)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* No *(Retrospective study.)* *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Yes *Did the case series have complete inclusion of participants?* No *(Some records did not have BCG vaccination status)* *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes

Joanna Briggs critical appraisal checklist for case series
Overall Bias and Directness *Overall Risk of Bias* High *(Retrospective study.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Generini 1997

Generini 1997	
Bibliographic Reference	Generini, S.; Ermini, M.; Taccetti, G.; Trapani, S.; Cerinic, M. M.; Falcini, F.; Clinical and laboratory features and disease outcome of kawasaki disease: the analysis of our experience and literature review; Journal of clinical rheumatology : practical reports on rheumatic & musculoskeletal diseases; 1997; vol. 3 (no. 5); 241-7

Study details

Study type	Patient records audit
Study details	Study location Italy Study setting Hospital Study dates 1980 to 1996 Exclusions None Sources of funding Not mentioned.
Inclusion criteria	Diagnosis of Kawasaki disease according to the Kawasaki Disease Research Committee (Japan)
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 73 % Female 33% Average age (variance) Mean 3 years and 1 month
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the Kawasaki Disease Research Committee (Japan)

Study arm

	Patients with Kawasaki disease (N = 73)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Yes *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Ghelani 2012

Ghelani 2012	
Bibliographic Reference	Ghelani, Sunil J.; Sable, Craig; Wiedermann, Bernhard L.; Spurney, Christopher F.; Increased incidence of incomplete Kawasaki disease at a pediatric hospital after publication of the 2004 American Heart Association guidelines; Pediatric cardiology; 2012; vol. 33 (no. 7); 1097-103

Study details

Study type	Patient records audit
Study details	Study location USA Study setting Hospital Study dates 2000 to 2002 and 2007 to 2009 Exclusions

Study type	Patient records audit
	Unknown number who had incomplete records or who did not receive intravenous gamma-immunoglobulin Sources of funding Not mentioned
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	Incomplete records or different sources of information that have conflicting information. Patients who did not receive intravenous gamma-immunoglobulin
Sample characteristics	Sample size 203 % Female 38% Average age (variance) Median of earlier group 26 months (IQR 12.5 to 52). Median of later group 38.5 months (IQR 18-63)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA

Study arm

	Patients with Kawasaki disease (N = 203)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* No *(AHA 2001 and 2004 guidelines were used.)* *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* No *(Some patients were excluded because of incomplete records and because they did not receive standard treatment.)* *Did the case series have complete inclusion of participants?* No *(Some patients were excluded because of incomplete records and because they did not receive standard treatment.)* *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes

Joanna Briggs critical appraisal checklist for case series
Was there clear reporting of the presenting site(s)/clinic(s) demographic information? Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(High (retrospective). Study used a combination of the 2001 and 2004 AHA guidelines to diagnose KD. Some patients were excluded because of incomplete records and not receiving standard treatment.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Giannouli 2013

Giannouli 2013	
Bibliographic Reference	Giannouli, Georgia; Tzoumaka-Bakoula, Chryssa; Kopsidas, Ioannis; Papadogeorgou, Paraskevi; Chrousos, George P.; Michos, Athanasios; Epidemiology and risk factors for coronary artery abnormalities in children with complete and incomplete Kawasaki disease during a 10-year period; Pediatric cardiology; 2013; vol. 34 (no. 6); 1476-81

Study details

Study type	Patient records audit
Study details	Study location Greece Study setting Hospital Study dates 2001 to 2010 Exclusions Incomplete data was included on 2 or 3 patients Sources of funding State Scholarship Foundation of Greece
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 86 % Female 39% Average age (variance) Mean 23 months (range 3-108)

Study type	Patient records audit
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA

Study arm

	Patients with Kawasaki disease (N = 86)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* No *(9 were excluded because of missing data)* *Did the case series have complete inclusion of participants?* No *(Incomplete data on 2 or 3 patients was used.)* *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study. Incomplete data for 2 or 3 patients was used.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Gorrab 2016

Gorrab 2016	
Bibliographic Reference	Gorrab, Arbia Abir; Fournier, Anne; Bouaziz, Asma Abed; Spigelblatt, Linda; Scuccimarri, Rosie; Mrabet, Ali; Dahdah, Nagib; Incidence Rate and Epidemiological and Clinical Aspects of Kawasaki Disease in Children of Maghrebi Origin in the Province of Quebec, Canada, Compared to the Country of Origin; Global pediatric health; 2016; vol. 3; 2333794x16630670

Study details

Study type	Patient records audit
Study details	Study location Canada (North African origin) Study setting Hospital Study dates 1996 to 2013 Exclusions None Sources of funding Not mentioned
Inclusion criteria	Diagnosis of Kawasaki disease. No diagnostic criteria provided. North African origin
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 146 % Female Not provided Average age (variance) Not provided
Outcome(s)	Rates of occurrence of associated symptoms and signs Rates of occurance of the principal criteria for Kawasaki disease

Study arm

	Patients with Kawasaki disease (N = 146)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? No *(Diagnostic criteria was not provided)* *Was the condition measured in a standard, reliable way for all participants included in the case series?* No *(Diagnostic criteria was not provided)* *Were valid methods used for identification of the condition for all participants included in the case series?* No *(Diagnostic criteria was not provided)* *Did the case series have consecutive inclusion of participants?* Unclear *Did the case series have complete inclusion of participants?* Unclear

Joanna Briggs critical appraisal checklist for case series
Was there clear reporting of the demographics of the participants in the study? No *(No demographic information)* *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* No *(No demographic information)* *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Diagnostic criteria not provided. No demographic data. Retrospective study.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Hu 2019

Hu 2019	
Bibliographic Reference	Hu, Ya-Chiao; Liu, Hsin-Min; Lin, Ming-Tai; Chen, Chun-An; Chiu, Shuenn-Nan; Lu, Chun-Wei; Chang, Luan-Yin; Wang, Jou-Kou; Wu, Mei-Hwan; Outcomes of Kawasaki Disease Children With Spontaneous Defervescence Within 10 Days; Frontiers in pediatrics; 2019; vol. 7; 158

Study details

Study type	Patient records audit
Study details	Study location Taiwan Study setting Hospital Study dates 2008 to 2015 Exclusions An unknown number of patients were excluded if they had received more than 1 dose of intravenous gamma-immunoglobulin Sources of funding Not mentioned
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria Patients receiving more than 1 dose of Intravenous gamma-immunoglobulin

Study type	Patient records audit
	Patients lost to follow-up Fever >10 days
Sample characteristics	Sample size 293 % Female 45% Average age (variance) Mean 1.8 years (SD 1.6)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA

Study arm

	Patients with Kawasaki disease (N = 293)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Unclear *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study.)* *Applicability as a source of data* Indirectly applicable

Joanna Briggs critical appraisal checklist for case series
(Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were excluded if they received more than 1 dose of intravenous gamma-immunoglobulin)

Huang 2006

Huang 2006	
Bibliographic Reference	Huang GY, Ma XJ, Huang M, et al. Epidemiologic pictures of Kawasaki disease in Shanghai from 1998 through 2002. Journal of Epidemiology 2006;16(1):9–14.

Study details

Study type	Patient records audit
Study details	Study location Japan Study setting Hospital Study dates 1998 to 2002 Exclusions Cases were excluded if the questionnaire form was not completed correctly Sources of funding This study was supported by Japan Kawasaki Disease Research Center and Japan Monbu-kagakusho Research Foundation
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the Kawasaki Disease Research Committee in Japan
Exclusion criteria	None or not meeting the inclusion criteria Cases were excluded if the questionnaire form was not completed correctly
Sample characteristics	Sample size 768 % Female 35% Average age (variance) Mean 1.8 years (range 1 month to 18.8 years)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the Kawasaki Disease Research Committee in Japan

Study arm

	Patients with Kawasaki disease (N = 768)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?*

Joanna Briggs critical appraisal checklist for case series
Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Unclear *Did the case series have complete inclusion of participants?* Uncear *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Jaggi 2018

Jaggi 2018	
Bibliographic Reference	Jaggi, Preeti; Grcic, Michelle; Kovalchin, John; Wilhelm, Carolyn M.; Yildirim-Toruner, Cagri; Texter, Karen; Using the Electronic Medical Record to Correlate Kawasaki Disease Phenotypes With Clinical Outcomes; Journal of the Pediatric Infectious Diseases Society; 2018; vol. 7 (no. 2); 119-123

Study details

Study type	Patient records audit
Study details	Study location USA Study setting Hospital Study dates 2012 to 2015 Exclusions None Sources of funding Not mentioned

Study type	Patient records audit
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 135 % Female Not provided Average age (variance) Typical group: median, 2.6 years (IQR 1.6 to 4.8). Atypical group with coronary artery abnormalities, median 5.0 years (IQR 2.2 to 8.4). Atypical group without coronary artery abnormalities, median 3.6 years (IQR 1.9 to 5.4)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA

Study arm

	Patients with Kawasaki disease (N = 135)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Unclear *Did the case series have complete inclusion of participants?* Unclear *Was there clear reporting of the demographics of the participants in the study?* No *(No mention of gender)* *Was there clear reporting of clinical information of the participants?* No *(Data on neck swelling by history is missing)* *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High

Joanna Briggs critical appraisal checklist for case series
(Retrospective study. Data on history of neck swelling is absent.) *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission.)

Jun 2015

Jun 2015	
Bibliographic Reference	Jun, Hyun Ok; Yu, Jeong Jin; Kang, So Yeon; Seo, Chang Deok; Baek, Jae Suk; Kim, Young-Hwue; Ko, Jae-Kon; Diagnostic characteristics of supplemental laboratory criteria for incomplete Kawasaki disease in children with complete Kawasaki disease; Korean journal of pediatrics; 2015; vol. 58 (no. 10); 369-73

Study details

Study type	Patient records audit
Study details	Study location South Korea Study setting Hospital Study dates 2006 to 2012 Exclusions Following patients were excluded from the study: 19 patients who were transferred from other institutes after initial IVIG treatment, 64 patients showing incomplete presentation, 10 patients that were admitted after fever lasting for more than 10 days and 63 patients in whom fever spontaneously subsided before initial IVIG administration. Sources of funding Not mentioned
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria Fever >10 days Patients who did not receive intravenous gamma-immunoglobulin Patients transferred to other hospitals
Sample characteristics	Sample size 355 % Female 40% Average age (variance) Median 25.2 months (range 1.6 to 186.0)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA

Study arm

	Patients with Kawasaki disease (N = 355)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Unclear *Did the case series have complete inclusion of participants?* No *(Following patients were excluded from the study: 19 patients who were transferred from other institutes after initial IVIG treatment, 64 patients showing incomplete presentation, 10 patients that were admitted after fever lasting for more than 10 days and 63 patients in whom fever spontaneously subsided before initial IVIG administration.)* *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Jun 2017

Jun 2017	
Bibliographic Reference	Jun, Woo Young; Ann, Yu Kyung; Kim, Ja Yeong; Son, Jae Sung; Kim, Soo-Jin; Yang, Hyun Suk; Bae, Sun Hwan; Chung, Sochung; Kim, Kyo Sun; Kawasaki Disease with Fever and Cervical Lymphadenopathy as the Sole Initial Presentation; Korean circulation journal; 2017; vol. 47 (no. 1); 107-114

Study details

Study type	Patient records audit
Study details	Study location

Study type	Patient records audit
	South Korea Study setting South Korea Study dates 2009 to 2013 Exclusions None Sources of funding Not mentioned
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 146 % Female 40% Average age (variance) Those presenting with fever and lymphadenopathy only: mean 3.9 years (SD 2.3). Others: mean 2.4 years (SD 1.7)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA

Study arm

	Patients with Kawasaki disease (N = 146)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Yes *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes

Joanna Briggs critical appraisal checklist for case series
Was there clear reporting of the presenting site(s)/clinic(s) demographic information? Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Kil 2017

Kil 2017	
Bibliographic Reference	Kil, Hong-Ryang; Yu, Jae-Won; Lee, Sung-Churl; Rhim, Jung-Woo; Lee, Kyung-Yil; Changes in clinical and laboratory features of Kawasaki disease noted over time in Daejeon, Korea; Pediatric rheumatology online journal; 2017; vol. 15 (no. 1); 60

Study details

Study type	Patient records audit
Study details	Study location South Korea Study setting Hospital Study dates 2000 to 2004 Exclusions None Sources of funding There was no funding
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 615 % Female 38% Average age (variance) Mean 29.7 months (SD 21.3)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA

Study arm

	Patients with Kawasaki disease (N = 615)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Unclear *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Kim 2017

Kim 2017	
Bibliographic Reference	Kim, Gi Beom; Park, Sohee; Eun, Lucy Youngmin; Han, Ji Whan; Lee, Soo Young; Yoon, Kyung Lim; Yu, Jeong Jin; Choi, Jong-Woon; Lee, Kyung-Yil; Epidemiology and Clinical Features of Kawasaki Disease in South Korea, 2012-2014; The Pediatric infectious disease journal; 2017; vol. 36 (no. 5); 482-485

Study details

Study type	Patient records audit
Study details	Study location South Korea Study setting Hospital

Study type	Patient records audit
	Study dates 2012 to 2014 Exclusions None Sources of funding Not mentioned
Inclusion criteria	Diagnosis of Kawasaki disease. No diagnostic criteria provided.
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 14916 % Female 42% Average age (variance) Mean 32.9 months (SD 24.0)
Outcome(s)	Clinical features

Study arm

	Patients with Kawasaki disease (N = 14916)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? No *(Criteria were not mentioned.)* *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Unclear *Did the case series have consecutive inclusion of participants?* Unclear *Did the case series have complete inclusion of participants?* Unclear *(Result of a questionnaire sent to hospitals)* *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?*

Joanna Briggs critical appraisal checklist for case series
Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Kim 2018

Kim 2018	
Bibliographic Reference	Kim, S. H.; Lee, H. J.; Lee, J. S.; Clinical aspects of periungual desquamation in Kawasaki disease; Iranian Journal of Pediatrics; 2018; vol. 28 (no. 3); e59262

Study details

Study type	Patient records audit
Study details	Study location South Korea Study setting Hospital Study dates 2011 to 2016 Exclusions Follow-up loss of 18 patients Sources of funding Not mentioned
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	Patients lost to follow-up Patients who were referred from another hospital for only echocardiography after treatment of KD.
Sample characteristics	Sample size 329 % Female 49% Average age (variance) Desquamation, mean 30.86 months (SD 25.02). No desquamation, mean 37.31 months (SD 45.6)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA Rate of occurrence of BCG scar reaction Rate of occurrence of periungual desquamation

Study arm

	Patients with Kawasaki disease (N = 329)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Yes *Did the case series have complete inclusion of participants?* No *(Follow-up loss of 18 patients.)* *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Kim 2009

Kim 2009	
Bibliographic Reference	Kim, Seong Hyun; Kim, Ki Hwan; Kim, Dong Soo; Clinical characteristics of Kawasaki disease according to age at diagnosis; Indian pediatrics; 2009; vol. 46 (no. 7); 585-90

Study details

Study type	Patient records audit
Study details	Study location South Korea Study setting Hospital

Study type	Patient records audit
	Study dates 2006 to 2007 Exclusions None Sources of funding No funding
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA Atypical (incomplete) Kawasaki disease was defined as meeting less than 4 clinical criteria, irrespective of echocardiography findings
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 153 % Female 45% Average age (variance) Mean age of 5 months and under group = 3.5 months. Mean age of 6 months to under 5 years group = 27 months
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA Rate of occurrence of BCG scar reaction Rates of occurrence of associated symptoms and signs

Study arm

	Patients with Kawasaki disease (N = 153)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Unclear *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes

Joanna Briggs critical appraisal checklist for case series
Were the outcomes or follow up results of cases clearly reported? Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission.)

Kubota 2008

Kubota 2008	
Bibliographic Reference	Kubota, Masaru; Usami, Ikuya; Yamakawa, Masaru; Tomita, Yasuhiko; Haruta, Tsunekazu; Kawasaki disease with lymphadenopathy and fever as sole initial manifestations; Journal of paediatrics and child health; 2008; vol. 44 (no. 6); 359-62

Study details

Study type	Patient records audit
Study details	Study location Japan Study setting Hospital Study dates 2000 to 2006 Exclusions 8 because this was a study about lymphadenopathy in Kawasaki disease and these patients had concomitant conditions affecting lymph node size. Sources of funding Not mentioned
Inclusion criteria	Diagnosis of Kawasaki disease according to the Kawasaki Disease Research Committee (Japan)
Exclusion criteria	This was a study about lymphadenopathy in Kawasaki disease so concomitant conditions that affected lymph gland size were excluded.
Sample characteristics	Sample size 136 % Female 42% Average age (variance) Range: 0.2 to 9 years

Study type	Patient records audit
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the Kawasaki Disease Research Committee (Japan)

Study arm

	Patients with Kawasaki disease (N = 136)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series?
Yes
Was the condition measured in a standard, reliable way for all participants included in the case series?
Yes
Were valid methods used for identification of the condition for all participants included in the case series?
Yes
Did the case series have consecutive inclusion of participants?
Unclear
Did the case series have complete inclusion of participants?
No
(This was a study about lymphadenopathy in Kawasaki disease so concomitant conditions that affected lymph gland size were excluded (8 patients).)
Was there clear reporting of the demographics of the participants in the study?
Yes
Was there clear reporting of clinical information of the participants?
Yes
Were the outcomes or follow up results of cases clearly reported?
Yes
Was there clear reporting of the presenting site(s)/clinic(s) demographic information?
Yes
Was statistical analysis appropriate?
Yes
Overall Bias and Directness
Overall Risk of Bias
High
(Retrospective study.)
Applicability as a source of data
Indirectly applicable
(Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. This was a study about cervical lymphadenopathy in Kawasaki disease so concomitant conditions that affected lymph gland size were excluded. Study includes children over the age of 5 years.)

Lee 2016

Lee 2016	
Bibliographic Reference	Lee, K. J.; Kim, H. J.; Kim, M. J.; Yoon, J. H.; Lee, E. J.; Lee, J. Y.; Oh, J. H.; Lee, S. J.; Lee, K. Y.; Han, J. W.; Usefulness of anterior uveitis as an additional

Lee 2016	
	tool for diagnosing incomplete Kawasaki disease; Korean Journal of Pediatrics; 2016; vol. 59 (no. 4); 174-177

Study details

Study type	Prospective cohort study
Study details	Study location Taiwan Study setting Hospital Study dates 1993 to 2008 Exclusions None Sources of funding Not provided
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 145 % Female 34% Average age (variance) Not provided
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA Rates of occurrence of associated symptoms and signs

Study arm

	Patients with Kawasaki disease (N = 145)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? No *(Diagnostic criteria were not provided.)* *Was the condition measured in a standard, reliable way for all participants included in the case series?* Unclear *(Diagnostic criteria were not provided.)* *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?*

Joanna Briggs critical appraisal checklist for case series
Yes *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Diagnostic criteria were not provided.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Li 2019

Li 2019	
Bibliographic Reference	Li, Wei; Zhang, Li; Huang, Ping; Zhang, Zhiwei; Clinical features and mid-term follow-up in infants younger than 3 months with Kawasaki disease in a Chinese population; Journal of paediatrics and child health; 2019; vol. 55 (no. 5); 523-527

Study details

Study type	Patient records audit
Study details	Study location China Study setting Hospital Study dates 2009 to 2013 Exclusions None Sources of funding Not mentioned
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 200

Study type	Patient records audit
	% Female 31% Average age (variance) < 3 month old group, mean 2.4 months (range 1 to 3 months). >3 month old group, mean 25 months (range 4 to 108 months)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA Clinical features

Study arm

	Patients with Kawasaki disease (N = 200)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Yes *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study.)* *Applicability as a source of data* Indirectly applicable (Data on signs and symptoms was not collected at first presentation; data was collected during the hospital stay. Some patients were over 5 years of age.)

Liu 2012

Liu 2012	
Bibliographic Reference	Liu, Hao-Chuan; Lo, Chiao-Wei; Hwang, Betau; Lee, Pi-Chang; Clinical manifestations vary with different age spectrums in infants with Kawasaki disease; TheScientificWorldJournal; 2012; vol. 2012; 210382

Study details

Study type	Patient records audit
Study details	Study location Taiwan Study setting Hospital Study dates 1993 to 2008 Exclusions None Sources of funding Not provided
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 145 % Female 34% Average age (variance) Not provided
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA Rates of occurrence of associated symptoms and signs

Study arm

	Patients with Kawasaki disease (N = 145)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Unclear

Joanna Briggs critical appraisal checklist for case series
Did the case series have complete inclusion of participants? Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Loh 2019

Loh 2019	
Bibliographic Reference	Loh, A. C. E.; Kua, P. H. J.; Tan, Z. L.; Erythema and induration of the bacillus calmette-guerin site for diagnosing kawasaki disease; Singapore Medical Journal; 2019; vol. 60 (no. 2); 89-93

Study details

Study type	Patient records audit
Study details	Study location Singapore Study setting Hospital Study dates 2007 to 2010 Exclusions None Sources of funding Not mentioned
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA BCG vaccination
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 279

Study type	Patient records audit
	% Female 38% Average age (variance) Mean 1.6 years (SD 1.8)
Outcome(s)	Rate of occurrence of BCG scar reaction

Study arm

	Patients with Kawasaki disease who had a previous BCG vaccination (N = 279)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* No *(Some children were excluded because details regarding any BCG vaccination was not included.)* *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study.)* *Applicability as a source of data* Indirectly applicable (Data on signs and symptoms was not collected at first presentation; data was collected during the hospital stay.)
QUADAS-2 checklist
Patient selection: risk of bias **Was a consecutive or random sample of patients enrolled?** No

Joanna Briggs critical appraisal checklist for case series

(Retrospective case-control design.)

Was a case-control design avoided?

No

Did the study avoid inappropriate exclusions?

Yes

Could the selection of patients have introduced bias?

High

Patient selection: applicability

Are there concerns that included patients do not match the review question?

Low

Index tests: risk of bias

Were the index test results interpreted without knowledge of the results of the reference standard?

Yes

If a threshold was used, was it pre-specified?

Unclear

("A constellation of clinical features")

Could the conduct or interpretation of the index test have introduced bias?

Unclear

Index tests: applicability

Are there concerns that the index test, its conduct, or interpretation differ from the review question?

Unclear

(Lack of information available which details initial assessment.)

Reference standard: risk of bias

Is the reference standard likely to correctly classify the target condition?

Yes

Were the reference standard results interpreted without knowledge of the results of the index test?

Unclear

Could the reference standard, its conduct, or its interpretation have introduced bias?

Unclear

Reference standard: applicability

Is there concern that the target condition as defined by the reference standard does not match the review question?

Low

Flow and timing: risk of bias

Was there an appropriate interval between index test(s) and reference standard?

Unclear

Did all patients receive a reference standard?

Yes

Did patients receive the same reference standard?

Yes

Were all patients included in the analysis?

Yes

Could the patient flow have introduced bias?

High

Overall risk of bias and directness

Joanna Briggs critical appraisal checklist for case series
Risk of Bias High **Directness** Partially applicable (Mixed population of KD and non-KD in control.)

Manlhiot 2012

Manlhiot 2012	
Bibliographic Reference	Manlhiot, Cedric; Christie, Erin; McCrindle, Brian W.; Rosenberg, Hans; Chahal, Nita; Yeung, Rae S. M.; Complete and incomplete Kawasaki disease: two sides of the same coin; European journal of pediatrics; 2012; vol. 171 (no. 4); 657-62

Study details

Study type	Patient records audit
Study details	Study location Canada Study setting Hospital Study dates 1990 to 2007 Exclusions None Sources of funding Arthritis Society Investigator Award and the CIBC World Markets Children's Miracle Foundation
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 955 % Female Typical 39%. Atypical 37% Average age (variance) Typical, mean 3.0 years (range 0.7 to 8.4). Atypical, mean 2.8 years (range 0.5 to 10.1)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA Clinical features

Study arm

	Patients with Kawasaki disease (N = 955)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes

Joanna Briggs critical appraisal checklist for case series
Was the condition measured in a standard, reliable way for all participants included in the case series? Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Yes *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Maric 2015

Maric 2015	
Bibliographic Reference	Maric, Lorna Stemberger; Knezovic, Ivica; Papic, Neven; Mise, Branko; Roglic, Srdan; Markovinovic, Leo; Tesovic, Goran; Risk factors for coronary artery abnormalities in children with Kawasaki disease: a 10-year experience; Rheumatology international; 2015; vol. 35 (no. 6); 1053-8

Study details

Study type	Patient records audit
Study details	Study location Croatia Study setting Hospital Study dates 2003 to 2012

Study type	Patient records audit
	Exclusions Six patients were excluded from the study due to incomplete medical records. Sources of funding Not mentioned
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 111 % Female 37% Average age (variance) Median 27 months (IQR 12 to 50)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA Rate of occurrence of BCG scar reaction

Study arm

	Patients with Kawasaki disease (N = 111)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Unclear *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes

Joanna Briggs critical appraisal checklist for case series
Overall Bias and Directness *Overall Risk of Bias* High *(Retrospective study)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Martins 2018

Martins 2018	
Bibliographic Reference	Martins, Andreia; Conde, Marta; Brito, Maria; Gouveia, Catarina; Arthritis in Kawasaki disease: A poorly recognised manifestation; Journal of paediatrics and child health; 2018; vol. 54 (no. 12); 1371-1374

Study details

Study type	Patient records audit
Study details	Study location Portugal Study setting Hospital Study dates 1998 to 2013 Exclusions None Sources of funding Not mentioned
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria Children admitted for a second opinion
Sample characteristics	Sample size 63 % Female 40% Average age (variance) Median 2.0 years (range 2.4 to 11.5)
Outcome(s)	Rate of occurrence of arthritis

Study arm

	Patients with Kawasaki disease (N = 63)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Yes *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Minich 2007

Minich 2007	
Bibliographic Reference	Baker, Annette L.; Lu, Minmin; Minich, L. LuAnn; Atz, Andrew M.; Klein, Gloria L.; Korsin, Rosalind; Lambert, Linda; Li, Jennifer S.; Mason, Wilbert; Radojewski, Elizabeth; Vetter, Victoria L.; Newburger, Jane W.; Pediatric Heart Network, Investigators; Associated symptoms in the ten days before diagnosis of Kawasaki disease; The Journal of pediatrics; 2009; vol. 154 (no. 4); 592-595.e2

Study details

Study type	Prospective cohort study
Study details	Study location Canada and USA Study setting Hospital Study dates 2002 to 2004

Study type	Prospective cohort study
	Exclusions None or not mentioned. Sources of funding Not mentioned
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria Patients who did not receive intravenous gamma-immunoglobulin
Sample characteristics	Sample size 562 % Female 40% Average age (variance) Median 3.6 years (SD 2.9)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA

Study arm

	Patients with Kawasaki disease (N = 562)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Yes *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes

Joanna Briggs critical appraisal checklist for case series
Overall Bias and Directness *Overall Risk of Bias* Low *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Moore 2014

Moore 2014	
Bibliographic Reference	Moore, Abigail; Harnden, Anthony; Mayon-White, Richard; Recognising Kawasaki disease in UK primary care: a descriptive study using the Clinical Practice Research Datalink; The British journal of general practice : the journal of the Royal College of General Practitioners; 2014; vol. 64 (no. 625); e477-83

Study details

Study type	Patient records audit
Study details	Study location UK Study setting Primary care Study dates 2007 to 2011 Exclusions 681 out of 755 children were excluded from the study because of missing data. Sources of funding National Institute for Health Research School for Primary Care Research (NIHR SPCR)
Inclusion criteria	Children under the age of 12 years who had a diagnosis of Kawasaki disease in the Clinical Practice Research Datalink and who had a hospital discharge diagnosis of Kawasaki disease Diagnosis of Kawasaki disease. No diagnostic criteria provided.
Exclusion criteria	Incomplete records or different sources of information that have conflicting information.
Sample characteristics	Sample size 104 % Female 47% Average age (variance) Age at diagnosis ranged from 2 months to 8 years, with a peak at 3 years. Five children over the age of 5 (7%) were diagnosed with Kawasaki disease
Outcome(s)	Rates of occurrence of all symptoms Only symptoms thought to be most relevant to suspecting a diagnosis of Kawasaki disease were included.

Study arm

	Patients with Kawasaki disease (N = 104)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series?
No
(No diagnostic criteria for Kawasaki disease)
Was the condition measured in a standard, reliable way for all participants included in the case series?
No
(Retrospective study.)
Were valid methods used for identification of the condition for all participants included in the case series?
Yes
Did the case series have consecutive inclusion of participants?
No
(227 children were excluded because the records did not correlate. A further 424 were excluded because there was missing data on signs and symptoms.)
Did the case series have complete inclusion of participants?
No
(227 children were excluded because the records did not correlate. A further 424 were excluded because there was missing data on signs and symptoms.)
Was there clear reporting of the demographics of the participants in the study?
Yes
Was there clear reporting of clinical information of the participants?
Yes
Were the outcomes or follow up results of cases clearly reported?
Yes
Was there clear reporting of the presenting site(s)/clinic(s) demographic information?
Not applicable
Was statistical analysis appropriate?
Yes
Overall Bias and Directness
Overall Risk of Bias
High
(681 out of 755 children were excluded from the study because of missing data. There was no reference standard for diagnosing Kawasaki disease.)
Applicability as a source of data
Partially applicable
(Some patients were over 5 years of age.)

Nomura 2012

Nomura 2012	
Bibliographic Reference	Nomura, Yuichi; Arata, Michiko; Masuda, Kiminori; Koriyama, Chihaya; Suruki, Nobutaka; Ueno, Kentaro; Yoshikawa, Hideki; Eguchi, Taisuke; Kawano, Yoshifumi; Kawasaki disease patients with six principal symptoms have a high risk of being a non-responder; Pediatrics international : official journal of the Japan Pediatric Society; 2012; vol. 54 (no. 1); 14-8

Study details

Study type	Patient records audit
Study details	Study location Japan Study setting Hospital Study dates 2002 to 2009 Exclusions 20: These patients were not treated with IVIG or were admitted after 7 days of illness. Sources of funding
Inclusion criteria	Diagnosis of Kawasaki disease according to the Japanese Circulation Society Joint Working Group (Japan)
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 207 % Female 42% Average age (variance) 5 symptom group, median 1.3 years (IQR 0.7 to 2.3). 6 symptom group, median 2.2 years (IQR 1.1 to 3.8)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease

Study arm

	Patients with Kawasaki disease (N = 207)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Yes *Did the case series have complete inclusion of participants?* No *(20: These patients were not treated with IVIG or were admitted after 7 days of illness.)* *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes

Joanna Briggs critical appraisal checklist for case series
Was there clear reporting of the presenting site(s)/clinic(s) demographic information? Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study. 20 patients were omitted. These patients were not treated with IVIG or were admitted after 7 days of illness.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Patel 2013

Patel 2013	
Bibliographic Reference	Patel, Amy; Holman, Robert C.; Callinan, Laura S.; Sreenivasan, Nandini; Schonberger, Lawrence B.; Fischer, Thea K.; Belay, Ermias D.; Evaluation of clinical characteristics of Kawasaki syndrome and risk factors for coronary artery abnormalities among children in Denmark; Acta paediatrica (Oslo, Norway : 1992); 2013; vol. 102 (no. 4); 385-90

Study details

Study type	Patient records audit
Study details	Study location Denmark Study setting Hospital Study dates 1994 to 2008 Exclusions 57 patients were excluded because of incomplete records. Sources of funding Funded through the Centers for Disease Control and Prevention.
Inclusion criteria	Discharge diagnosis of Kawasaki disease according to ICD-10
Exclusion criteria	None or not meeting the inclusion criteria Incomplete records or different sources of information that have conflicting information.
Sample characteristics	Sample size 314 % Female Not provided Average age (variance) Not provided

Study type	Patient records audit
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease

Study arm

	Patients with Kawasaki disease (N = 314)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Unclear *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Unclear *Did the case series have complete inclusion of participants?* No *(57 patients were excluded because of incomplete records.)* *Was there clear reporting of the demographics of the participants in the study?* No *(Demographic information for the signs and symptoms data is not provided.)* *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* No *(No demographic information for the signs and symptoms data.)* *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Peng 2019

Peng 2019	
Bibliographic Reference	Peng, Yu; Liu, Xiaohui; Duan, Zhao; Deng, Yuhong; Cai, Sufen; Wang, Zhi; Xu, Kun; Kang, Hui; Jiang, Man; Li, Lin; Zhou, Yulan; Zou, Zheng; Prevalence and characteristics of arthritis in Kawasaki disease: a Chinese cohort study; Clinical and experimental medicine; 2019; vol. 19 (no. 2); 167-172

Study details

Study type	Patient records audit
Study details	Study location China Study setting Hospital Study dates 2014 to 2017 Exclusions 216 patients were excluded due to the following reasons: 56 patients received the initial treatment before hospitalization, 11 patients were recurrent cases and the data were incomplete in 149 patients. Sources of funding Health Committee Foundation of Jiangxi Province, and Natural Science Foundation of Jiangxi Province
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	Incomplete records or different sources of information that have conflicting information. Initial treatment before hospitalisation Recurrent cases
Sample characteristics	Sample size 1420 % Female 40% Average age (variance) Median 20 months (IQR 14.31)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA Rate of occurrence of arthritis

Study arm

	Patients with Kawasaki disease (N = 1420)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* No

Joanna Briggs critical appraisal checklist for case series
(There were many exclusions because of incomplete records.) *Did the case series have complete inclusion of participants?* No *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study. Many patients were excluded because of incomplete records.)* *Applicability as a source of data* Indirectly applicable (Data on signs and symptoms was not collected at first presentation; data was collected during the hospital stay. Some patients were over 5 years of age.)

Perrin 2009

Perrin 2009	
Bibliographic Reference	Perrin, Laurence; Letierce, Alexia; Guitton, Corinne; Tran, Tu-Anh; Lambert, Virginie; Kone-Paut, Isabelle; Comparative study of complete versus incomplete Kawasaki disease in 59 pediatric patients; Joint, bone, spine : revue du rhumatisme; 2009; vol. 76 (no. 5); 481-5

Study details

Study type	Patient records audit
Study details	Study location France Study setting Hospital Study dates 1995 to 2006 Exclusions None Sources of funding Not mentioned
Inclusion criteria	Typical (complete) Kawasaki disease: fever for at least 5 days and at least 4 of the 5 principal criteria as described by the AHA Atypical (incomplete) Kawasaki disease: fever for at least 5 days and 1 to 3 principal criteria as described by the AHA

Study type	Patient records audit
	Exceptional cases: Typical (complete) Kawasaki disease: fever for less than 5 days and at least 4 of the 5 principal criteria as described by the AHA + coronary artery disease on echocardiography
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 59 % Female 29 Average age (variance) 33 months (range: 2 to 169 months)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA

Study arm

	Patients with Kawasaki disease (N = 59)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* No *(This is a retrospective review of case records.)* *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Yes *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(This is a retrospective review of case records.)* *Applicability as a source of data*

Joanna Briggs critical appraisal checklist for case series
Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Piao 2010

Piao 2010	
Bibliographic Reference	Piao, Jin-hua; Jin, Lian-hua; Lv, Jie; Zhou, Yan; Jin, Chun-ji; Jin, Zheng-yong; Epidemiological investigation of Kawasaki disease in Jilin province of China from 2000 to 2008; Cardiology in the young; 2010; vol. 20 (no. 4); 426-32

Study details

Study type	Patient records audit
Study details	Study location China Study setting Hospital Study dates 2000 to 2008 Exclusions None Sources of funding Not mentioned
Inclusion criteria	Diagnostic criteria for Kawasaki disease in the VIIth International Kawasaki Disease Symposium (Japan)
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 735 % Female 34% Average age (variance) Mean 36 months (SD 45.6)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the 7th international Kawasaki disease symposium - Japan

Study arm

	Patients with Kawasaki disease (N = 735)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes

Joanna Briggs critical appraisal checklist for case series
Were valid methods used for identification of the condition for all participants included in the case series? Yes *Did the case series have consecutive inclusion of participants?* Unclear *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Ruan 2013

Ruan 2013	
Bibliographic Reference	Ruan, Yu; Ye, Bei; Zhao, Xiaodong; Clinical characteristics of Kawasaki syndrome and the risk factors for coronary artery lesions in China; The Pediatric infectious disease journal; 2013; vol. 32 (no. 10); e397-402

Study details

Study type	Patient records audit
Study details	Study location China Study setting Hospital Study dates 2003 to 2009 Exclusions Four of these patients were excluded because of insufficient clinical or laboratory data. Sources of funding Not mentioned
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA

Study type	Patient records audit
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 1209 % Female 36% Average age (variance) Not provided for the relevant <6 months age and over 6 months to 60 months ages groups.
Outcome(s)	Clinical features

Study arm

	Patients with Kawasaki disease (N = 1209)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Yes *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission.)

Sanchez-Maubens 2016

Sanchez-Maubens 2016	
Bibliographic Reference	Sanchez-Manubens, Judith; Anton, Jordi; Bou, Rosa; Iglesias, Estibaliz; Calzada-Hernandez, Joan; Kawasaki Disease in Catalonia Working, Group; Incidence, epidemiology and clinical features of Kawasaki disease in Catalonia, Spain; Clinical and experimental rheumatology; 2016; vol. 34 (no. 3suppl97); S139-44

Study details

Study type	Patient records audit
Study details	Study location Spain Study setting hospital Study dates 2004 to 2013 Exclusions None Sources of funding Not mentioned
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria Incomplete records or different sources of information that have conflicting information. Over 16 years of age Children admitted for a second opinion
Sample characteristics	Sample size 399 % Female 41% Average age (variance) Mean 37 months (SD 33)
Outcome(s)	Rates of occurrence of all symptoms

Study arm

	Patients with Kawasaki disease (N = 399)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes

Joanna Briggs critical appraisal checklist for case series
Were valid methods used for identification of the condition for all participants included in the case series? Yes *Did the case series have consecutive inclusion of participants?* Unclear *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Sehgal 2015

Sehgal 2015	
Bibliographic Reference	Sehgal, Swati; Chen, Xinguang; Ang, Jocelyn Y.; Epidemiology, Clinical Presentation, and Outcomes of Kawasaki Disease Among Hospitalized Children in an Inner City Hospital Before and After Publication of the American Academy of Pediatrics/American Heart Association Guidelines for Treatment of Kawasaki Disease: An 11-Year Period; Clinical pediatrics; 2015; vol. 54 (no. 13); 1283-9

Study details

Study type	Patient records audit
Study details	Study location USA Study setting Hospital Study dates 2000 to 2009 Exclusions None Sources of funding There was no funding.

Study type	Patient records audit
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 312 % Female 39% Average age (variance) Mean 42 months (SD 31)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA

Study arm

	Patients with Kawasaki disease (N = 312)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Yes *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study)* *Applicability as a source of data* Indirectly applicable

Joanna Briggs critical appraisal checklist for case series
(Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Shamsizadeh 2014

Shamsizadeh 2014	
Bibliographic Reference	Shamsizadeh, Ahmad; Ziaei Kajbaf, Tahereh; Razavi, Maryam; Cheraghian, Bahman; Clinical and epidemiological characteristics of kawasaki disease; Jundishapur journal of microbiology; 2014; vol. 7 (no. 8); e11014

Study details

Study type	Patient records audit
Study details	Study location Iran Study setting Hospital Study dates 2000 to 2010 Exclusions None Sources of funding Not mentioned
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA Kawasaki disease using the criteria as described by the American Academy of Pediatrics guideline.
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 104 % Female 37% Average age (variance) Mean 33.6 months (SD 24.2), range: 3 months - 8 years
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA Clinical features

Study arm

	Patients with Kawasaki disease (N = 104)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes

Joanna Briggs critical appraisal checklist for case series
Was the condition measured in a standard, reliable way for all participants included in the case series? Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Yes *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Shiozawa 2014

Shiozawa 2014	
Bibliographic Reference	Shiozawa, Yusuke; Inuzuka, Ryo; Harita, Yutaka; Kagawa, Jiro; Age-related differences in the course of the acute phase symptoms of Kawasaki disease; The Pediatric infectious disease journal; 2013; vol. 32 (no. 9); e365-9

Study details

Study type	Patient records audit
Study details	Study location Japan Study setting Hospital Study dates 2006 to 2012 Exclusions None Sources of funding

Study type	Patient records audit
	This study was supported by institutional and departmental sources at the Department of Pediatrics, Fujieda Municipal General Hospital, Japan.
Inclusion criteria	Diagnosis of Kawasaki disease according to the Kawasaki Disease Research Committee (Japan)
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 100 % Female 34% Average age (variance) Median 24 months (IQR 10 to 53)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the Kawasaki Disease Research Committee (Japan)

Study arm

	Patients with Kawasaki disease (N = 100)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Yes *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study.)* *Applicability as a source of data*

Joanna Briggs critical appraisal checklist for case series
Partially applicable (Some patients were over 5 years of age.)

Sittiwangkul 2011

Sittiwangkul 2011	
Bibliographic Reference	Sittiwangkul, R.; Pongprot, Y.; Silvilairat, S.; Phornphutkul, C.; Delayed diagnosis of Kawasaki disease: risk factors and outcome of treatment; Annals of tropical paediatrics; 2011; vol. 31 (no. 2); 109-14

Study details

Study type	Patient records audit
Study details	Study location Thailand Study setting Hospital Study dates 2000 to 2008 Exclusions None Sources of funding Not mentioned
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 170 % Female 40% Average age (variance) Median 19 months (range 2 to 80)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA Clinical features

Study arm

	Patients with Kawasaki disease (N = 170)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes

Joanna Briggs critical appraisal checklist for case series
Were valid methods used for identification of the condition for all participants included in the case series? Yes *Did the case series have consecutive inclusion of participants?* Yes *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study)* *Applicability as a source of data* Indirectly applicable (Some patients were over 5 years of age. Data on signs and symptoms was not collected at first presentation; data was collected during the hospital stay.)

Sittiwangkul 2013

Sittiwangkul 2013	
Bibliographic Reference	Sittiwangkul, Rekwan; Pongprot, Yupada; Silvilairat, Suchaya; Makonkaewkeyoon, Krit; Clinical spectrum of incomplete Kawasaki disease in Thailand; Paediatrics and international child health; 2013; vol. 33 (no. 3); 176-80

Study details

Study type	Patient records audit
Study details	Study location Thailand Study setting Hospital - tertiary referral centre Study dates 2001 to 2009 Exclusions Sources of funding Not mentioned
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA

Study type	Patient records audit
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 208 % Female 37% Average age (variance) Typical: mean 22.3 months (SD 15.3). Atypical: mean 22.4 months (SD 17.9)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA Rates of occurrence of associated symptoms and signs

Study arm

	Patients with Kawasaki disease (N = 208)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Unclear *Did the case series have complete inclusion of participants?* Unclear *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. This study was conducted at a tertiary referral centre.)

Sonobe 2007

Sonobe 2007	
Bibliographic Reference	Sonobe, Tomoyoshi; Kiyosawa, Nobuyuki; Tsuchiya, Keiji; Aso, Seijiro; Imada, Yoshio; Imai, Yoko; Yashiro, Mayumi; Nakamura, Yoshikazu; Yanagawa, Hiroshi; Prevalence of coronary artery abnormality in incomplete Kawasaki disease; Pediatrics international : official journal of the Japan Pediatric Society; 2007; vol. 49 (no. 4); 421-6

Study details

Study type	Patient records audit
Study details	Study location Japan Study setting Hospital Study dates 2001 to 2002 Exclusions None mentioned Sources of funding Not mentioned
Inclusion criteria	Diagnosis of Kawasaki disease. No diagnostic criteria provided.
Exclusion criteria	None or not meeting the inclusion criteria Incomplete records or different sources of information that have conflicting information.
Sample characteristics	Sample size 15857 % Female 43% Average age (variance) An overall value is not provided
Outcome(s)	Rates of occurance of the principal criteria for Kawasaki disease

Study arm

	Patients with Kawasaki disease (N = 15857)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? No *(Diagnostic criteria was not provided.)* *Was the condition measured in a standard, reliable way for all participants included in the case series?* Unclear *(Diagnostic criteria was not provided.)*

Joanna Briggs critical appraisal checklist for case series
Were valid methods used for identification of the condition for all participants included in the case series? Unclear *Did the case series have consecutive inclusion of participants?* Unclear *Did the case series have complete inclusion of participants?* Unclear *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study. Diagnostic criteria was not provided.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Stemberger 2018

Stemberger 2018	
Bibliographic Reference	Stemberger Maric, Lorna; Papic, Neven; Sestan, Mario; Knezovic, Ivica; Tesovic, Goran; Challenges in early diagnosis of Kawasaki disease in the pediatric emergency department: differentiation from adenoviral and invasive pneumococcal disease; Wiener klinische Wochenschrift; 2018; vol. 130 (no. 78); 264-272

Study details

Study type	Patient records audit
Study details	Study location Croatia Study setting Hospital Study dates 2006 to 2015 Exclusions None Sources of funding Not mentioned

Study type	Patient records audit
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria Patients under 3 months of age Patients over 3 years of age
Sample characteristics	Sample size 110 % Female 35% Average age (variance) Mean 16 months (SD 8.7 to 25.2)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA Clinical features

Study arm

	Patients with Kawasaki disease (N = 110)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Yes *Did the case series have complete inclusion of participants?* Unclear *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias*

Joanna Briggs critical appraisal checklist for case series
High *(Retrospective study.)* *Applicability as a source of data* Indirectly applicable (Data on signs and symptoms was not collected at first presentation; data was collected during the hospital stay. There was a relatively narrow window of recruitment - 3 months to 3 years of age.)

Sun 2018

Sun 2018	
Bibliographic Reference	Sun, Ling; Tang, Yunjia; Wang, Ye; Qian, Guanghui; Yan, Wenhua; Wang, Bo; Li, Xuan; Lv, Haitao; Changes in Profiles of Kawasaki Disease Noted over Time in Suzhou, China; Cardiology; 2018; vol. 141 (no. 1); 25-31

Study details

Study type	Patient records audit
Study details	Study location China Study setting Hospital Study dates 2006 to 2017 Exclusions None Sources of funding National Natural Science Foundation of China, Science and Technology Support Program of Jiangsu Province and Science and Technology Projects for the Youth of Suzhou
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 1008 % Female 36% Average age (variance) Median 18 months (IQR 10 to 35)
Outcome(s)	Clinical features

Study arm

	Patients with Kawasaki disease (N = 1008)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes

Joanna Briggs critical appraisal checklist for case series
Was the condition measured in a standard, reliable way for all participants included in the case series? Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* No *(Clinical details are missing for 896 patients, leaving data for 1008)* *Did the case series have complete inclusion of participants?* No *(Clinical details are missing for 896 patients, leaving data for 1008)* *Was there clear reporting of the demographics of the participants in the study?* No *(Demographic details of only the patients who have clinical data is not available.)* *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* No *(Clinical details are missing for 896 patients, leaving data for 1008)* *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study. Clinical details are missing for 896 patients, leaving data for 1008)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Tacke 2014

Tacke 2014	
Bibliographic Reference	Tacke, Carline E.; Breunis, Willemijn B.; Pereira, Rob Rodrigues; Breur, Johannes M.; Kuipers, Irene M.; Kuijpers, Taco W.; Five years of Kawasaki disease in the Netherlands: a national surveillance study; The Pediatric infectious disease journal; 2014; vol. 33 (no. 8); 793-7

Study details

Study type	Patient records audit
Study details	Study location The Netherlands Study setting Hospital Study dates 2008 to 2012

Study type	Patient records audit
	Exclusions Not all clinicians returned data. Sources of funding Stinafo Foundation
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 319 % Female 40% Average age (variance) Median 2.4 years (range 0.1 to 14.6)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA Clinical features

Study arm

	Patients with Kawasaki disease (N = 319)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* No *(Survey but not all clinicians returned data)* *Did the case series have complete inclusion of participants?* No *(Survey but not all clinicians returned data)* *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes

Joanna Briggs critical appraisal checklist for case series
Was statistical analysis appropriate? Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study. Survey but not all clinicians returned data.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Tajima 2015

Tajima 2015	
Bibliographic Reference	Tajima, Miyu; Shiozawa, Yusuke; Kagawa, Jiro; Early Appearance of Principal Symptoms of Kawasaki Disease is a Risk Factor for Intravenous Immunoglobulin Resistance; Pediatric cardiology; 2015; vol. 36 (no. 6); 1159-65

Study details

Study type	Patient records audit
Study details	Study location Japan Study setting Hospital Study dates 2006 to 2012 Exclusions None Sources of funding Not mentioned
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 100 % Female 38% Average age (variance) Median 24 months (IQR 10 to 53)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA

Study arm

	Patients with Kawasaki disease (N = 100)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Unclear *Did the case series have complete inclusion of participants?* Unclear *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study)* *Applicability as a source of data* Indirectly applicable (Data on signs and symptoms was not collected at first presentation; data was collected during the hospital stay. Some patients were over 5 years of age.)

Tang 2016

Tang 2016	
Bibliographic Reference	Tang, Yunjia; Gao, Xiang; Shen, Jie; Sun, Ling; Yan, Wenhua; Epidemiological and Clinical Characteristics of Kawasaki Disease and Factors Associated with Coronary Artery Abnormalities in East China: Nine Years Experience; Journal of tropical pediatrics; 2016; vol. 62 (no. 2); 86-93

Study details

Study type	Patient records audit
Study details	Study location China Study setting Hospital Study dates 2006 to 2014 Exclusions

Study type	Patient records audit
	Eleven auto-discharged cases and three cases with incomplete data were excluded. Sources of funding Chinese Natural Science Foundation, Jiangsu Province Science Foundation and Suzhou Science and Technology Bureau.
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 1016 % Female 36% Average age (variance) Median 17 months (range 2 to 129)
Outcome(s)	Clinical features

Study arm

	Patients with Kawasaki disease (N = 1016)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Unclear *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study.)*

Joanna Briggs critical appraisal checklist for case series
Applicability as a source of data Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Teng 2012

Teng 2012	
Bibliographic Reference	Teng, Mei-Chen; Wang, Li-Chieh; Yu, Hsin-Hui; Lee, Jyh-Hong; Yang, Yao-Hsu; Chiang, Bor-Luen; Kawasaki disease and Henoch-Schonlein purpura - 10 years' experience of childhood vasculitis at a university hospital in Taiwan; Journal of microbiology, immunology, and infection = Wei mian yu gan ran za zhi; 2012; vol. 45 (no. 1); 22-30

Study details

Study type	Patient records audit
Study details	Study location Taiwan Study setting Hospital Study dates 1997 to 2007 Exclusions None Sources of funding Not mentioned
Inclusion criteria	Diagnosis of Kawasaki disease. No diagnostic criteria provided.
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 351 % Female Not provided Average age (variance) Not provided
Outcome(s)	Clinical features

Study arm

	Patients with Kawasaki disease (N = 351)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? No *(Diagnostic criteria was not provided)*

Joanna Briggs critical appraisal checklist for case series
Was the condition measured in a standard, reliable way for all participants included in the case series? Unclear *Were valid methods used for identification of the condition for all participants included in the case series?* Unclear *Did the case series have consecutive inclusion of participants?* Unclear *Did the case series have complete inclusion of participants?* Unclear *Was there clear reporting of the demographics of the participants in the study?* No *(No demographic details)* *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Unclear *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective and diagnostic criteria not provided.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Tewelde 2014

Tewelde 2014	
Bibliographic Reference	Tewelde, Helen; Yoon, Jeein; Van Ittersum, Wendy; Worley, Sarah; Preminger, Tamar; Goldfarb, Johanna; The Harada score in the US population of children with Kawasaki disease; Hospital pediatrics; 2014; vol. 4 (no. 4); 233-8

Study details

Study type	Patient records audit
Study details	Study location USA Study setting Hospital Study dates 2001 to 2011 Exclusions None Sources of funding

Study type	Patient records audit
	No external funding
Inclusion criteria	ICD-9 codes for "Kawasaki disease", and "Kawasaki disease and "mucocutaneous lymph node syndrome".
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 105 % Female 32% Average age (variance) Median 2.8 years (Q1 1.6, Q3 5.5)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to ICD-9

Study arm

	Patients with Kawasaki disease (N = 105)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Unclear *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study.)* *Applicability as a source of data* Indirectly applicable

Joanna Briggs critical appraisal checklist for case series
(Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Uehara 2010

Uehara 2010	
Bibliographic Reference	Uehara, Ritei; Igarashi, Hiroshi; Yashiro, Mayumi; Nakamura, Yosikazu; Yanagawa, Hiroshi; Kawasaki disease patients with redness or crust formation at the Bacille Calmette-Guerin inoculation site; The Pediatric infectious disease journal; 2010; vol. 29 (no. 5); 430-3

Study details

Study type	Patient records audit
Study details	Study location Japan Study setting Hospital Study dates 2005 to 2006 Exclusions None mentioned Sources of funding Ministry of Health, Labour, and Welfare in Japan
Inclusion criteria	Diagnosis of Kawasaki disease according to the Kawasaki Disease Research Committee (Japan) BCG vaccination
Exclusion criteria	None or not meeting the inclusion criteria No BCG vaccination
Sample characteristics	Sample size 15524 % Female Not provided Average age (variance) Not provided
Outcome(s)	Rate of occurrence of BCG scar reaction

Study arm

	Patients with Kawasaki disease who had a BCG vaccination (N = 15524)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes

Joanna Briggs critical appraisal checklist for case series
Was the condition measured in a standard, reliable way for all participants included in the case series? Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* No *(Data was returned by 71% of hospitals)* *Did the case series have complete inclusion of participants?* No *(Data was returned by 71% of hospitals)* *Was there clear reporting of the demographics of the participants in the study?* No *(Data on mean age and gender was not provided.)* *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study. Data was only returned by 71% of hospitals. Data on age and gender was not provided.)* *Applicability as a source of data* Indirectly applicable (Data on signs and symptoms was not collected at first presentation; data was collected during the hospital stay. Some patients were over 5 years of age.)

Wang 2009

Wang 2009	
Bibliographic Reference	Wang, Susan; Best, Brookie M.; Burns, Jane C.; Periungual desquamation in patients with Kawasaki disease; The Pediatric infectious disease journal; 2009; vol. 28 (no. 6); 538-9

Study details

Study type	Patient records audit
Study details	Study location USA Study setting Hospital

Study type	Patient records audit
	Study dates 2003 to 2007 Exclusions None Sources of funding Not mentioned
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 243 % Female Not provided. Average age (variance) Not provided.
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA Rate of occurrence of periungual desquamation

Study arm

	Patients with Kawasaki disease (N = 243)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Unclear *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* No *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes

Joanna Briggs critical appraisal checklist for case series
Was statistical analysis appropriate? Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study.)* *Applicability as a source of data* Indirectly applicable (Some patients may have been over 5 years of age. Perianal desquamation was measured one month after the fever started)

Yellen 2010

Yellen 2010	
Bibliographic Reference	Yellen, Elizabeth S.; Gauvreau, Kimberlee; Takahashi, Masato; Burns, Jane C.; Shulman, Stanford; Baker, Annette L.; Innocentini, Nancy; Zambetti, Chiara; Pancheri, Joan M.; Ostrow, Adam; Frazer, Jeffrey R.; Sundel, Robert P.; Fulton, David R.; Newburger, Jane W.; Performance of 2004 American Heart Association recommendations for treatment of Kawasaki disease; Pediatrics; 2010; vol. 125 (no. 2); e234-41

Study details

Study type	Patient records audit
Study details	Study location USA Study setting Hospital Study dates 1981 to 2006 Exclusions 53 were excluded because of incomplete records.
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 195 % Female 37% Average age (variance) Median 2.1 years (range 0.1 to 19.4)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA

Study arm

	Patients with Kawasaki disease (N = 195)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* No *(53 were excluded because of incomplete records.)* *Did the case series have complete inclusion of participants?* No *(53 were excluded because of incomplete records.)* *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study. 53 were excluded because of incomplete records.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Yoon 2016

Yoon 2016	
Bibliographic Reference	Yoon, You Min; Yun, Hye Won; Kim, Sung Hye; Clinical Characteristics of Kawasaki Disease in Infants Younger than Six Months: A Single-Center Study; Korean circulation journal; 2016; vol. 46 (no. 4); 550-5

Study details

Study type	Patient records audit
Study details	Study location South Korea Study setting Hospital Study dates

Study type	Patient records audit
	2013 to 2015 Exclusions None Sources of funding Not mentioned
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 239 % Female 43% Average age (variance) Of those under 6 months of age, mean 4.5 months (SD 1.4). For those over 6 months of age, mean 31.9 months (SD 19.0)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the AHA

Study arm

	Patients with Kawasaki disease (N = 239)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Yes *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness**

Joanna Briggs critical appraisal checklist for case series
Overall Risk of Bias High *(Retrospective study)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Yun 2011

Yun 2011	
Bibliographic Reference	Yun, Sang Hyun; Yang, Nu Ri; Park, Sin Ae; Associated symptoms of kawasaki disease; Korean circulation journal; 2011; vol. 41 (no. 7); 394-8

Study details

Study type	Patient records audit
Study details	Study location South Korea Study setting Hospital Study dates 2005 to 2010 Exclusions None Sources of funding Not mentioned
Inclusion criteria	Typical and atypical Kawasaki disease using the criteria as described by the AHA Which is the same as the Japanese Ministry of Health and Welfare's criteria.
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 121 % Female 36% Average age (variance) Mean 31.8 months +/- 23.8
Outcome(s)	Rates of occurrence of associated symptoms and signs

Study arm

	Patients with Kawasaki disease (N = 121)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes

Joanna Briggs critical appraisal checklist for case series
Was the condition measured in a standard, reliable way for all participants included in the case series? Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Unclear *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study.)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Zhang 2016

Zhang 2016	
Bibliographic Reference	Zhang, X.; Liang, Y.; Feng, W.; Su, X.; Zhu, H.; Epidemiologic survey of Kawasaki disease in Inner Mongolia, China, between 2001 and 2013; Experimental and Therapeutic Medicine; 2016; vol. 12 (no. 2); 1220-1224

Study details

Study type	Patient records audit
Study details	Study location Mongolia Study setting Hospital Study dates 2001 to 2013 Exclusions None Sources of funding Not mentioned

Study type	Patient records audit
Inclusion criteria	Diagnosis of Kawasaki disease according to the Kawasaki Disease Research Committee (Japan)
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 518 % Female 38% Average age (variance) Median 1.42 years (range 49 days to 14 years)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the Kawasaki Disease Research Committee (Japan) Clinical features

Study arm

	Patients with Kawasaki disease (N = 518)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?* Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Unclear *Did the case series have complete inclusion of participants?* No *(Some patients were excluded because of incomplete records.)* *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study. Some patients were excluded because of incomplete records.)*

Joanna Briggs critical appraisal checklist for case series
Applicability as a source of data Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Zhang 2012

Zhang 2012	
Bibliographic Reference	Zhang, X.; Zhang, Z.; Liu, S.; Sun, J.; Epidemiologic survey of kawasaki disease in Jilin from 1999 through 2008; Pediatric Cardiology; 2012; vol. 33 (no. 2); 272-279

Study details

Study type	Patient records audit
Study details	Study location China Study setting Hospital Study dates 1999 to 2008 Exclusions None Sources of funding Not mentioned
Inclusion criteria	Diagnosis of Kawasaki disease according to the Japanese Circulation Society Joint Working Group (Japan)
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 577 % Female 34% Average age (variance) Mean 2.67 years (SD 2.37)
Outcome(s)	Rates of occurrence of the principal criteria for Kawasaki disease according to the Kawasaki Disease Research Committee (Japan)

Study arm

	Patients with Kawasaki disease (N = 577)

Joanna Briggs critical appraisal checklist for case series
Were there clear criteria for inclusion in the case series? Yes *Was the condition measured in a standard, reliable way for all participants included in the case series?*

Joanna Briggs critical appraisal checklist for case series
Yes *Were valid methods used for identification of the condition for all participants included in the case series?* Yes *Did the case series have consecutive inclusion of participants?* Yes *Did the case series have complete inclusion of participants?* Yes *Was there clear reporting of the demographics of the participants in the study?* Yes *Was there clear reporting of clinical information of the participants?* Yes *Were the outcomes or follow up results of cases clearly reported?* Yes *Was there clear reporting of the presenting site(s)/clinic(s) demographic information?* Yes *Was statistical analysis appropriate?* Yes **Overall Bias and Directness** *Overall Risk of Bias* High *(Retrospective study)* *Applicability as a source of data* Indirectly applicable (Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Zhu 2015

Zhu 2015	
Bibliographic Reference	Zhu, Hua; Yu, Shao-Fei; Bai, Yu-Xin; Liang, Yan-Yan; Su, Xue-Wen; Pan, Jing-Ying; Kawasaki disease in children: Epidemiology, clinical symptoms and diagnostics of 231 cases in 10 years; Experimental and therapeutic medicine; 2015; vol. 10 (no. 1); 357-361

Study details

Study type	Patient records audit
Study details	Study location China Study setting China Study dates 2003 to 2012 Exclusions None Sources of funding Not mentioned

Study type	Patient records audit
Inclusion criteria	Diagnosis of Kawasaki disease according to the Kawasaki Disease Research Committee (Japan)
Exclusion criteria	None or not meeting the inclusion criteria
Sample characteristics	Sample size 231 % Female 32% Average age (variance) Age range 3 months to 10 years
Outcome(s)	Rates of occurance of the principal criteria for Kawasaki disease

Study arm

	Patients with Kawasaki disease (N = 231)

Joanna Briggs critical appraisal checklist for case series

Were there clear criteria for inclusion in the case series?
Yes
Was the condition measured in a standard, reliable way for all participants included in the case series?
Yes
Were valid methods used for identification of the condition for all participants included in the case series?
Yes
Did the case series have consecutive inclusion of participants?
Unclear
Did the case series have complete inclusion of participants?
Unclear
Was there clear reporting of the demographics of the participants in the study?
Yes
Was there clear reporting of clinical information of the participants?
Yes
Were the outcomes or follow up results of cases clearly reported?
Yes
Was there clear reporting of the presenting site(s)/clinic(s) demographic information?
Yes
Was statistical analysis appropriate?
Yes
Overall Bias and Directness
Overall Risk of Bias
High
(Retrospective study)
Applicability as a source of data
Indirectly applicable
(Signs and symptoms were not collected at presentation; they were collected throughout hospital admission. Some patients were over 5 years of age.)

Appendix F – GRADE profiles

Case series

The 5 principal signs and symptoms (specified by the American heart association, AHA)

During course of illness: conjunctival injection

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									
Maric 2015 Giannouli 2013 Perrin 2009	Europe (not UK)	All	78 62 39	92.8% (84.2 to 96.4) 90.3% (80.5 to 95.5) 93.3% (79.7 to 97.4) **Median 92.8% IQR (91.6 to 93.1)**	Very serious[1]	Very serious[2]	Not serious	Very serious[3]	Very low
Manlhiot 2012 Tang 2016 Bai 2017 Behmadi 2019 Sonobe 2007 Kil 2017 Chang 2014 Sittiwangkul 2013 Tewelde 2014 Ghelani 2012 Yellen 2010 Jaggi 2018	Outside Europe	All	728 716 298 105 13301 387 226 147 67 127 195 105	95.0% (93.2 to 96.3) 92.0% (89.8 to 93.8) 95.0% (91.9 to 96.9) 96.2% (90.6 to 98.5) 96.9% (96.6 to 97.2) 96.9% (94.7 to 98.2) 96.9% (93.8 to 98.5) 94.6% (89.6 to 97.2) 95.5% (87.6 to 98.5) 96.1% (91.1 to 98.3) 100.0% (97.2 to 100.0) 83.8 % (75.6 to 89.6) **Median 95.8% IQR (94.9 to 96.9)**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Maric 2015 Giannouli 2013 Perrin 2009	Europe (not UK)	All	33 22 20	78.8% (62.3 to 89.3) 27.3% (13.2 to 48.2) 65.0% (43.3 to 81.9)	Very serious[1]	Very serious[2]	Not serious	Very serious[3]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
				Median 65.0% IQR (46.1 to 71.9)					
Manlhiot 2012 Tang 2016 Bai 2017 Behmadi 2019 Sonobe 2007 Lee 2016 Kil 2017 Sittiwangkul 2013 Tewelde 2014 Ghelani 2012 Yellen 2010 Jaggi 2018	Outside Europe	All	217 300 85 71 2556 111 228 61 38 76 53 30	70.5% (64.1 to 76.2) 65.3% (59.8 to 70.5) 74.1% (63.9 to 82.4) 62.0% (50.3 to 72.4) 75.6% (73.9 to 77.2) 93.7% (87.6 to 96.9) 85.5% (80.4 to 89.5) 63.9% (51.4 to 74.8) 92.1% (79.2 to 97.3) 69.7% (58.7 to 78.9) 84.9% (73.0 to 92.2) 60.0% (42.3 to 75.4) **Median 72.3% IQR (65.0 to 85.1)**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Stemberger 2018 Patel 2013 Generini 1997 Falcini 2007 Sanchez-Maubens 2016 Tacke 2014	Europe (not UK)	All	110 314 73 266 399 319	65.5% (56.2 to 73.7) 94.6% (91.5 to 96.6) 68.5% (57.1 to 78.0) 97.4% (94.7 to 98.7) 79.7% (75.5 to 83.4) 87.1% (83.0 to 90.4) **Median 83.4% IQR (71.3 to 92.1)**	Very serious[1]	Very serious[2]	Not serious	Not serious	Very low
Ebbeson 2005 Ruan 2013 Li 2018 Kim 2009 Yoon 2016 Teng 2012 Liu 2012	Outside Europe	<1 year	32 49 40 22 26 109 65	87.5% (71.9 to 95.0) 93.9% (83.5 to 97.9)[6] 35.0% (22.1 to 50.5)[7] 68.2% (47.3 to 83.6)[8] 42.3% (25.4 to 61.1)[9] 84.4% (76.4 to 90.0) 92.3% (83.2 to 96.7)	Very serious[1]	Very serious[2]	Serious[4]	Very serious[3]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
				Median 84.4% IQR (55.3 to 89.9)					
Ebbeson 2005 Ruan 2013 Li 2018 Kim 2009 Yoon 2016 Teng 2012 Liu 2012	Outside Europe	≥1 year	92 1160 160 131 213 242 80	82.6% (73.6 to 89.0) 95.9% (94.6 to 96.9)[6] 74.4% (67.1 to 80.5)[7] 72.5% (64.3 to 79.4)[8] 80.3% (74.4 to 85.1)[9] 81.4% (76.0 to 85.8) 93.8% (86.2 to 97.3) **Median 81.4% IQR (77.4 to 88.2)**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Boudiaf 2016 Saundankar 2014 Zhang 2016 Zhang 2012 Zhu 2015 Chen 2016 Sun 2018 Peng 2019 Advani 2019 Shamsizadeh 2014 Kubota 2008 Piao 2010 Nomura 2012 Tajima 2015 Garrido-Garcia 2017 Gorrab 2016 Kim 2017 Jun 2017 Jun 2015 Kim 2018 Hu 2019	Outside Europe	All	133 353 518 577 231 2304 1008 1420 542 104 136 735 207 100 399 146 14916 146 355 292 293	91.0% (84.9 to 94.8) 86.7% (82.7 to 89.8) 68.5% (64.4 to 72.4) 76.1% (72.4 to 79.4) 66.2% (59.9 to 72.0) 84.3% (82.8 to 85.7) 89.1% (87.0 to 90.9) 95.8% (94.6 to 96.7) 85.2% (85.2 to 88.0) 89.4% (82.1 to 94.0) 96.3% (91.7 to 98.4) 77.8% (74.7 to 80.7) 98.6% (95.8 to 99.5) 98.0% (93.0 to 99.5) 90.2% (86.9 to 92.8) 79.5% (72.2 to 85.2) 88.6% (88.1 to 89.1) 86.3% (79.8 to 91.0) 97.7% (95.6 to 98.9) 88.8% (84.9 to 91.7) 91.8% (88.1 to 94.4)	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Sittiwangkul 2011			170	88.2% (82.5 to 92.3)					
Falcini 2012			228	63.6% (57.2 to 69.6)					
LuAnn Minich 2007			562	88.1% (85.1 to 90.5)					
Wang 2009			243	91.8% (87.6 to 94.6)					
Bal 2014			106	90.6% (90.3 to 95.8)					
Sehgal 2015			312	93.6% (90.3 to 95.8)					
Huang 2006[10]			768	78.4% (75.3 to 81.2)					
				Median 88.8% IQR (84.8 to 91.8)					

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants
6. Ruan 2013 groups data for children <6 months old and for children between 6 months to 5 years old
7. Li 2018 groups data for children <3 months old and for children over 3 months old
8. Kim 2009 groups data for children ≤5 months old and for children between 5 months to <5 years old
9. Yoon 2016 groups data for children ≤6 months old and for children over 6 months old
10. This study is one of two studies that formed the basis of the previous 2013 recommendations

At presentation: conjunctival injection

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Moore 2014 (Primary care)	UK	All	74	31.1% (21.7 to 42.3) **Median 31.1% IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
Shiozawa 2013 (at time of presentation of principal symptoms other than fever)	Outside Europe	<2 year	51	45.1% (32.3 to 58.6)[4] **Median 45.1% IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Shiozawa 2013 (at time of presentation of principal symptoms other than fever)	Outside Europe	≥2 year	49	16.3% (8.5 to 29.0)[4] **Median 16.3% IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
Shiozawa 2013 (day 5 of fever)	Outside Europe	<2 year	51	84.3% (72.0 to 91.8)[4] **Median 84.3 % IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
Shiozawa 2013 (day 5 of fever)	Outside Europe	≥2 year	49	85.7 % (73.3 to 92.9) **Median 85.7% IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were partially direct
3. <33.3% of studies had >100 participants
4. Shiozawa 2013 groups data for children ≤2 years old and for children over 2 years old

During course of illness: oral changes

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									
Maric 2015 Giannouli 2013 Perrin 2009	Europe (not UK)	All	78 62 39	94.9% (87.5 to 98.0) 98.4% (91.4 to 99.7) 100.0% (91.0 to 100) **Median 98.4% IQR 96.7 to 99.2**	Very serious[1]	Very serious[2]	Not serious	Very serious[3]	Very low
Manlhiot 2012 Bai 2017 Behmadi 2019 Sonobe 2007 Lee 2016 Kil 2017	Outside Europe	All	738 298 105 13301 111 387	96.2% (94.6 to 97.4) 81.9% (77.1 to 85.8) 98.1% (93.3 to 99.5) 95.7% (95.3 to 96.0) 63.1% (53.8 to 71.5) 96.1% (93.7 to 97.6)	Very serious[1]	Very serious[2]	Serious[4]	Not serious	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Chang 2014			226	95.1% (91.5 to 97.3)					
Sittiwangkul 2013			147	100.0% (97.5 to 100)					
Tewelde 2014			67	98.5% (92.0 to 99.7)					
Ghelani 2012			127	91.3% (85.2 to 95.1)					
Yellen 2010			137	97.1% (92.7 to 98.9)					
Jaggi 2018			105	77.1% (68.2 to 84.1)					
				Median 95.9% IQR 89.0 to 97.4					
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Maric 2015	Europe (not UK)	All	33	63.6% (46.6 to 77.8)	Very serious[1]	Very serious[2]	Not serious	Very serious[3]	Very low
Giannouli 2013			22	81.8% (61.5 to 92.7)					
Perrin 2009			20	65.0% (43.3 to 81.9)					
				Median 65.0% IQR 64.3 to 73.4					
Manlhiot 2012	Outside Europe	All	217	67.3% (60.8 to 73.2)	Very serious[1]	Very serious[2]	Serious[4]	Very serious[3]	Very low
Bai 2017			85	54.1% (43.6 to 64.3)					
Behmadi 2019			71	56.3% (44.8 to 67.3)					
Sonobe 2007			2556	62.8% (60.9 to 64.7)					
Kil 2017			228	63.6% (57.2 to 69.6)					
Sittiwangkul 2013			61	73.8% (61.6 to 83.2)					
Tewelde 2014			38	71.1% (55.2 to 83.0)					
Ghelani 2012			76	57.9% (46.7 to 68.4)					
Yellen 2010			53	67.9% (54.5 to 78.9)					
Jaggi 2018			30	43.3% (27.4 to 60.8)					
				Median 63.2% IQR 56.7 to 67.8					
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Stemberger Maric 2018	Europe (not UK)	All	110	38.2% (29.7 to 47.5)	Very serious[1]	Very serious[2]	Not serious	Not serious	Very low
Patel 2013			314	97.8% (95.5 to 98.9)					
Generini 1997			73	94.5% (86.7 to 97.9)					
Falcini 2007			266	96.6% (93.7 to 98.2)					
Tacke 2014			319	87.5% (83.4 to 90.7)					

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
				Median 94.5% IQR 87.5 to 96.6					
Ebbeson 2004 Li 2018 Kim 2009 Yoon 2016 Teng 2012 Liu 2012	Outside Europe	<1 year	32 40 22 26 109 65	62.5% (45.2 to 77.1) 40.0% (26.4 to 55.4)[6] 86.4% (66.7 to 95.3)[7] 42.3% (25.5 to 61.1)[8] 67.9% (58.6 to 75.9) 89.2% (79.4 to 94.7) **Median 65.2% IQR 47.4 to 81.8**	Very serious[1]	Very serious[2]	Serious[4]	Very serious[3]	Very low
Ebbeson 2004 Li 2018 Kim 2009 Yoon 2016 Teng 2012 Liu 2012	Outside Europe	≥1 year	92 160 131 213 242 80	76.1% (66.4 to 83.6) 77.5% (70.4 to 83.3)[6] 78.6% (70.8 to 84.8)[7] 76.5% (70.4 to 81.7)[8] 73.6% (67.7 to 78.7) 91.3% (83.0 to 95.7) **Median 77.0% IQR 76.2 to 78.3**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Boudiaf 2016 Saundankar 2014 Zhang 2016 Zhang 2012 Zhu 2015 Chen 2016 Peng 2019 Advani 2019 Shamsizadeh 2014	Outside Europe	All	133 353 518 577 231 2304 1420 542 104	97.7% (93.6 to 99.2) 94.6% (91.8 to 96.5) 73.9% (70.0 to 77.5) 90.6% (88.0 to 92.8) 87.4% (82.6 to 91.1) 84.0% (82.4 to 85.4) 89.5% (87.8 to 91.0) 93.9% (91.6 to 95.6) 86.5% (78.7 to 91.8)	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Kubota 2008			136	89.7% (83.5 to 93.8)					
Piao 2010			735	91.0% (88.7 to 92.9)					
Nomura 2012			207	94.7% (90.7 to 97.0)					
Tajima 2015			100	84.0% (75.6 to 89.0)					
Garrido-Garcia 2017			399	94.7% (92.1 to 96.5)					
Gorrab 2016			146	97.9% (94.1 to 99.3)					
Kim 2017			14916	83.2% (82.6 to 83.8)					
Jun 2017			146	91.1% (85.4 to 94.7)					
Jun 2015			355	94.9% (92.1 to 96.8)					
Kim 2018			329	83.6% (79.2 to 87.2)					
Hu 2019			293	82.6% (77.8 to 86.5)					
Sittiwangkul 2011			170	81.8% (75.3 to 86.9)					
Falcini 2012			228	65.4% (58.8 to 71.2)					
LuAnn Minich 2007			562	88.1% (85.1 to 90.5)					
Wang 2009			243	95.5% (92.1 to 97.5)					
Bal 2014			106	90.6% (83.5 to 94.8)					
Sehgal 2015			312	90.1% (86.2 to 92.9)					
Huang 2006[9]			768	83.5% (80.7 to 85.9)					
				Median 89.7% IQR 83.8 to 94.3					

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants
6. Li 2018 groups data for children <3 months old and for children over 3 months old
7. Kim 2009 groups data for children ≤5 months old and for children between 5 months to <5 years old
8. Yoon 2016 groups data for children ≤6 months old and for children over 6 months old
9. This study is one of two studies that formed the basis of the previous 2013 recommendations

At presentation: oral changes

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Shiozawa 2013 (at time of presentation of principal symptoms other than fever)	Outside Europe	<1 year	51	29.4% (18.7 to 43.0) **Median 29.4%** **IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
Shiozawa 2013 (at time of presentation of principal symptoms other than fever)	Outside Europe	≥1 year	49	12.2% (5.73 to 24.2) **Median 12.2%** **IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
Shiozawa 2013 (day 5 of fever)	Outside Europe	<2 year	51	64.7% (51.0 to 76.4)[4] **Median 64.7%** **IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
Shiozawa 2013 (day 5 of fever)	Outside Europe	≥2 year	49	73.5% (59.7 to 83.8)[4] **Median 73.5%** **IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were partially direct
3. <33.3% of studies had >100 participants
4. Shiozawa 2013 groups data for children ≤2 years old and for children over 2 years old

During course of illness: changes in the extremities

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									
Maric 2015 Giannouli 2013 Perrin 2009	Europe (not UK)	All	78 64 39	78.2% (67.8 to 85.9) 65.6% (53.4 to 76.1) 97.4% (86.8 to 99.6)	Very serious[1]	Very serious[2]	Not serious	Very serious[3]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
				Median 78.2% IQR 71.9 to 87.8					
Manlhiot 2012 Behmadi 2019 Sonobe 2007 Kil 2017 Chang 2014 Sittiwangkul 2013 Telwelde 2014 Ghelani 2012 Yellen 2010 Jaggi 2018	Outside Europe	All	738 105 13301 387 226 147 67 127 137 105	87.0% (84.4 to 89.2) 67.6% (58.2 to 75.8) 90.8% (90.3 to 91.3) 93.8% (90.9 to 95.8) 71.7% (65.5 to 77.2) 90.5% (84.7 to 94.2) 92.5% (83.7 to 96.8) 84.3% (76.9 to 89.6) 88.3% (81.9 to 92.7) 68.6% (59.2 to 76.7) **Median 87.7% IQR 74.9 to 90.8)**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Maric 2015 Giannouli 2013 Perrin 2009	Europe (not UK)	All	33 22 20	54.5% (38.0 to 70.2) 13.6% (4.75 to 33.3) 30.0% (13.6 to 51.9) **Median 30.0% IQR 21.8 to 42.2**	Very serious[1]	Very serious[2]	Not serious	Very serious[3]	Very low
Manlhiot 2012 Behmadi 2019 Sonobe 2007 Lee 2016 Kil 2017 Sittiwangkul 2013 Falcini 2012 Tewelde 2014 Ghelani 2012 Yellen 2010 Jaggi 2018	Outside Europe	All	217 71 2556 111 228 61 228 38 76 53 30	40.1% (33.8 to 46.7) 15.5% (8.88 to 25.7) 44.3% (42.4 to 46.2) 18.0% (12.0 to 26.2) 59.2% (52.7 to 65.4) 37.7% (26.6 to 50.3) 27.2% (21.8 to 33.3) 28.9% (17.0 to 44.8) 39.5% (29.3 to 50.7) 20.8% (12.0 to 33.5) 40.0% (24.6 to 57.7)	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
				Median 37.7% IQR 24.0 to 40.1					
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Stemberger Maric 2018 Patel 2013 Generini 1997 Falcini 2007 Tacke 2014	Europe (not UK)	All	110 269 73 266 319	26.4% (19.0 to 35.3) 85.7% (81.4 to 89.1) 89.0% (79.8 to 94.3) 82.0% (76.9 to 86.1) 77.4% (72.5 to 81.7) **Median 82.0% IQR 77.4 to 85.7**	Very serious[1]	Very serious[2]	Not serious	Serious[5]	Very low
Ebbeson 2005 Li 2018 Kim 2009 Yoon 2016 Liu 2012	Outside Europe	<1 year	32 40 22 26 65	46.9% (30.9 to 63.6) 12.5% (5.46 to 26.1)[6] 36.4% (19.7 to 57.1)[7] 26.9% (13.7 to 46.1)[8] 46.2% (34.6 to 58.2) **Median 36.4% IQR 26.9 to 46.2**	Very serious[1]	Very serious[2]	Serious[4]	Very serious[3]	Very low
Ebbeson 2005 Li 2018 Kim 2009 Yoon 2016 Liu 2012	Outside Europe	≥1 year	92 160 58 213 80	80.4% (71.2 to 87.3) 73.8% (66.4 to 80.0)[6] 44.3% (36.1 to 52.8)[7] 61.5% (54.8 to 67.8)[8] 50.0% (39.3 to 60.7) **Median 61.5% IQR 50.0 to 73.8**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Boudiaf 2016 Saundankar 2014 Zhang 2016	Outside Europe	All	133 353 518	96.2% (91.5 to 98.4) 72.8% (67.9 to 77.2) 62.2% (57.9 to 66.2)	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Zhang 2012			577	84.9% (81.8 to 87.6)					
Gorrab 2016			146	82.9% (75.9 to 88.1)					
Zhu 2015			231	61.0% (54.6 to 67.1)					
Chen 2016			2304	67.4% (65.4 to 69.3)					
Peng 2019			1420	48.9% (46.3 to 51.5)					
Advani 2019			542	67.7% (63.7 to 71.5)					
Shamsizadeh 2014			104	66.3% (56.8 to 74.7)					
Kubota 2008			136	87.5% (80.9 to 92.1)					
Normura 2012			207	93.7% (89.6 to 96.3)					
Tajima 2015			100	85.0% (76.7 to 90.7)					
Garrido-Garcia 2017			399	71.4% (66.8 to 75.6)					
Kim 2017			14916	64.8% (64.0 to 65.6)					
Jun 2017			146	75.3% (67.8 to 81.6)					
Jun 2018			355	93.0% (89.8 to 95.2)					
Kim 2018			329	63.2% (57.9 to 68.3)					
Hu 2019			293	72.4% (67.0 to 77.2)					
Sittiwangkul 2011			170	75.3% (68.3 to 81.2)					
LuAnn Minich 2007			562	77.0% (73.4 to 80.3)					
Wang 2009			243	79.8% (74.3 to 84.4)					
Sehgal 2015			312	72.4% (67.2 to 77.1)					
Piao 2010			735	35.2% (31.9 to 38.8)					
				Median 72.6% IQR 65.9 to 83.4					

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7. Kim 2009 groups data for children ≤5 months old and for children between 5 months to <5 years old
8. Yoon 2016 groups data for children ≤6 months old and for children over 6 months old

At presentation: changes in the extremities

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Shiozawa 2013 (at time of presentation of principal symptoms other than fever)	Outside Europe	<1 year	51	19.6% (11.0 to 32.5)[4] **Median 19.6% IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
Shiozawa 2013 (at time of presentation of principal symptoms other than fever)	Outside Europe	≥1 year	49	6.1% (2.10 to 16.5)[4] **Median 6.1% IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
Shiozawa 2013 (day 5 of fever)	Outside Europe	<2 year	51	62.7% (49.0 to 74.7)[4] **Median 62.7% IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
Shiozawa 2013 (day 5 of fever)	Outside Europe	≥2 year	49	61.2% (47.3 to 73.6)[4] **Median 61.2% IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were partially direct
3. <33.3% of studies had >100 participants
4. Shiozawa 2013 groups data for children ≤2 years old and for children over 2 years old

During course of illness: polymorphous rash

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									
Maric 2015 Giannouli 2013	Europe (not UK)	All	78 50	93.6% (85.9 to 97.2) 80.6% (69.2 to 88.6)	Very serious[1]	Very serious[2]	Not serious	Very serious[3]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Perrin 2009			39	94.9% (83.1 to 98.6) **Median 93.6% IQR 87.1 to 94.3**					
Manlhiot 2012 Tang 2016 Bai 2017 Behmadi 2019 Sonobe 2007 Kil 2017 Chang 2014 Sittiwangkul 2013 Tewelde 2014 Ghelani 2012 Yellen 2010 Jaggi 2018	Outside Europe	All	738 716 298 105 13301 387 226 147 67 127 137 105	93.5% (91.5 to 95.1) 90.4% (88.0 to 92.3) 88.3% (84.1 to 91.4) 87.6% (80.0 to 92.6) 94.0% (93.6 to 94.4) 86.3% (82.5 to 89.4) 92.0% (87.8 to 94.9) 98.0% (94.2 to 99.3) 98.5% (92.0 to 99.7) 96.9% (92.2 to 98.8) 100.0% (97.3 to 100) 89.5% (82.2 to 94.1) **Median 92.8% IQR 89.2 to 97.2**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Maric 2015 Giannouli 2013 Perrin 2009	Europe (not UK)	All	33 22 20	75.8% (59.0 to 87.2) 63.6% (43.0 to 80.3) 65.0% (43.3 to 81.9) **Median 65.0% IQR 64.3 to 70.4**	Very serious[1]	Very serious[2]	Not serious	Very serious[3]	Very low
Manlhiot 2012 Tang 2016 Bai 2017 Behmadi 2019 Sonobe 2007 Lee 2016 Kil 2017 Sittiwangkul 2013 Falcini 2012	Outside Europe	All	217 300 85 71 2556 111 228 61 288	69.1% (62.7 to 74.9) 44.3% (38.8 to 50.0) 49.4% (39.0 to 59.8) 45.1% (34.1 to 56.6) 64.9% (63.0 to 66.7) 67.6% (58.4 to 75.6) 24.6% (19.4 to 30.5) 62.3% (62.3 to 73.4) 67.5% (61.2 to 73.3)	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Tewelde 2014 Ghelani 2012 Yellen 2010 Jaggi 2018			38 76 53 30	73.7% (58.0 to 85.0) 68.4% (57.3 to 77.8) 79.2% (66.5 to 88.0) 66.7% (48.8 to 80.8) **Median 66.7% IQR 49.4 to 68.4**					
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Stemberger Maric 2018 Patel 2013 Generini 1997 Falcini 2007 Sanchez-Manubens 2017 Tacke 2014	Europe (not UK)	All	110 295 73 266 399 319	74.5% (65.7 to 81.8) 93.9% (90.7 to 96.1) 86.3% (76.6 to 92.4) 99.6% (97.9 to 99.9) 84.2% (80.3 to 87.5) 89.7% (85.8 to 92.5) **Median 88.0% IQR 84.7 to 92.9**	Very serious[1]	Very serious[2]	Not serious	Serious[5]	Very low
Ebbeson 2005 Li 2018 Kim 2009 Yoon 2016 Teng 2012 Liu 2012	Outside Europe	<1 year	32 40 22 26 109 65	87.5% (71.9 to 95.0) 42.5% (28.5 to 57.8)[6] 63.6% (43.0 to 80.3)[7] 61.5% (42.5 to 77.6)[8] 78.9% (70.3 to 85.5) 90.8% (81.3 to 95.7) **Median 86.3% IQR 74.5 to 89.7**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Ebbeson 2005 Li 2018 Kim 2009 Yoon 2016 Teng 2012 Liu 2012	Outside Europe	≥1 year	92 160 131 213 242 80	93.5% (86.5 to 97.0) 82.5% (75.9 to 87.6)[6] 66.4% (58.0 to 73.9)[7] 78.4% (72.4 to 83.4)[8]	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
				81.0% (75.6 to 85.4) 91.3% (83.0 to 95.7) **Median 81.8% IQR 79.1 to 89.1**					
Boudiaf 2016 Saundankar 2014 Zhang 2016 Zhang 2012 Zhu 2015 Chen 2016 Peng 2019 Advani 2019 Shamizadeh 2014 Kubota 2008 Piao 2010 Nomura 2012 Tajima 2015 Garrido-Garcia 2017 Gorrab 2016 Kim 2017 Jun 2017 Jun 2015 Kim 2018 Hu 2019 Sittiwangkul 2011 LuAnn Minich 2007 Wang 2009 Bal 2014 Sehgal 2015 Huang 2006[9]	Outside Europe	All	133 353 518 577 231 2304 1420 542 104 136 735 207 100 399 146 14916 146 355 329 293 170 562 243 106 312 768	97.7% (93.6 to 99.2) 96.0% (93.5 to 97.6) 64.5% (60.3 to 68.5) 75.9% (72.3 to 79.2) 57.6% (51.1 to 63.8) 73.7% (71.9 to 75.5) 82.7% (80.7 to 84.6) 86.5% (83.4 to 89.2) 76.0% (66.9 to 83.2) 96.3% (91.7 to 98.4) 72.2% (68.9 to 75.4) 95.2% (91.3 to 97.4) 94.0% (87.5 to 97.2) 85.0% (81.1 to 88.1) 91.1% (85.4 to 94.7) 83.1% (82.5 to 83.7) 78.8% (71.4 to 84.6) 91.5% (88.2 to 94.0) 85.1% (80.5 to 88.6) 90.4% (86.5 to 93.3) 89.4% (83.9 to 93.2) 85.9% (82.8 to 88.6) 96.3% (96.1 to 98.0) 83.0% (74.8 to 89.0) 93.9% (90.7 to 96.1) 81.0% (78.1 to 83.6) **Median 85.5% IQR 79.4 to 93.3**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
1. >33.3% of participants from studies at high risk of bias 2. >33.3% participants from studies that were indirect 3. <33.3% of studies had >100 participants 4. Confidence intervals were non-overlapping 5. <33.3% of studies had >300 participants 6. Li 2018 groups data for children <3 months old and for children over 3 months old 7. Kim 2009 groups data for children ≤5 months old and for children between 5 months to <5 years old 8. Yoon 2016 groups data for children ≤6 months old and for children over 6 months old 9. This study is one of two studies that formed the basis of the previous 2013 recommendations									

At presentation: polymorphous rash

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Moore 2014 (primary care)	UK	All	74	63.5% (52.1 to 73.6) **Median 63.5%** **IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
Shiozawa 2013 (at time of presentation of principal symptoms other than fever)	Outside Europe	<1 year	51	78.4% (65.4 to 87.5)[4] **Median 78.4%** **IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
Shiozawa 2013 (at time of presentation of principal symptoms other than fever)	Outside Europe	≥1 year	49	24.5% (14.6 to 38.1)[4] **Median 24.5%** **IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
Shiozawa 2013 (day 5 of fever)	Outside Europe	<2 year	51	92.2% (81.5 to 96.9)[4] **Median 92.2%** **IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
Shiozawa 2013 (day 5 of fever)	Outside Europe	≥2 year	49	79.6% (66.4 to 88.5)[4]	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
				Median 79.6% IQR -					

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were partially direct
3. <33.3% of studies had >100 participants
4. Shiozawa 2013 groups data for children ≤2 years old and for children over 2 years old

During course of illness: cervical lymphadenopathy

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									
Maric 2015 Giannouli 2013 Perrin 2009	Europe (not UK)	All	78 66 39	43.6% (33.1 to 54.6) 72.7% (61.0 to 82.0) 38.5% (24.9 to 54.1) **Median 43.6% IQR 41.1 to 58.2**	Very serious[1]	Very serious[2]	Not serious	Very serious[3]	Very low
Manlhiot 2012 Tang 2016 Bai 2017 Behmadi 2019 Sonobe 2007 Kil 2017 Chang 2014 Sittiwangkul 2013 Tewelde 2014 Ghelani 2012 Yellen 2010	Outside Europe	All	738 716 298 105 13301 387 226 147 67 127 137	74.7% (71.4 to 77.7) 73.0% (69.7 to 76.2) 24.8% (20.3 to 30.0) 63.8% (54.3 to 72.4) 75.3% (74.6 to 76.0) 63.0% (58.1 to 67.7) 40.3% (34.1 to 46.8) 42.9% (35.1 to 50.9) 37.3% (26.7 to 49.3) 72.4% (64.1 to 79.5) 53.3% (45.0 to 61.4) **Median 63.0% IQR 41.6 to 72.7**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Meric 2015 Giannouli 2013 Perrin 2009	Europe (not UK)	All	33 22 20	27.3% (15.1 to 44.2) 59.1% (38.7 to 76.7) 30.0% (14.6 to 51.9) **Median 30.0% IQR 28.7 to 44.6**	Very serious[1]	Very serious[2]	Not serious	Very serious[3]	Very low
Manlhoit 2012 Tang 2016 Bai 2017 Behmadi 2019 Sonobe 2007 Lee 2016 Kil 2017 Sittiwangkul 2013 Falcini 2012 Tewelde 2014 Ghelani 2012 Yellen 2010	Outside Europe	All	62 300 85 71 2556 111 228 61 228 38 76 53	28.6% (23.0 to 34.9) 33.7% (28.6 to 39.2) 64.7% (54.1 to 74.0) 19.7% (12.1 to 30.4) 38.6% (36.8 to 40.5) 40.5% (31.9 to 49.8) 32.5% (26.7 to 38.8) 18.0% (10.4 to 29.5) 39.5% (33.4 to 45.9) 21.1% (11.1 to 36.4) 30.3% (21.1 to 41.3) 18.9% (10.6 to 31.4) **Median 31.4% IQR 20.8 to 38.8**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Stemberger Maric 2018 Patel 2013 Generini 1997 Falcini 2007 Sanchez-Manubens 2016 Tacke 2014	Europe (not UK)	All	110 314 73 266 399 319	30.9% (23.0 to 40.1) 75.5% (70.4 to 79.9) 34.2% (24.4 to 45.7) 71.8% (66.1 to 76.9) 28.8% (24.6 to 33.5) 71.8% (66.6 to 76.4) **Median 53.0% IQR 31.7 to 71.8**	Very serious[1]	Very serious[2]	Not serious	Serious[5]	Very low
Ebbeson 2004 Ruan 2013 Li 2018	Outside Europe	<1 year	32 49 40	3.1% (0.55 to 15.7) 14.3% (7.10 to 26.7)[6]	Very serious[1]	Very serious[2]	Serious[4]	Very serious[3]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Kim 2009 Yoon 2016 Teng 2012 Liu 2012			22 26 109 65	30.0% (18.1 to 45.4)[7] 31.8% (16.4 to 52.7)[8] 15.4% (6.15 to 33.5)[9] 36.7% (28.3 to 46.1) 24.6% (15.8 to 36.3) **Median 24.6% IQR 14.9 to 30.9**					
Ebbeson 2004 Ruan 2013 Li 2018 Kim 2009 Yoon 2016 Teng 2012 Liu 2012	Outside Europe	≥1 year	92 1160 160 131 213 242 80	29.3% (21.0 to 39.3) 31.4% (28.8 to 34.1)[6] 66.9% (59.3 to 73.7)[7] 35.9% (28.2 to 44.4)[8] 57.3% (50.6 to 63.7)[9] 62.4% (56.1 to 68.3) 63.8% (52.8 to 73.4) **Median 57.3% IQR 33.7 to 63.1**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Boudiaf 2016 Saundankar 2014 Zhang 2016 Zhang 2012 Zhu 2015 Chen 2016 Sun 2018 Peng 2019 Advani 2019 Shamsizadeh 2014	Outside Europe	All	133 353 518 577 231 2304 1008 1420 542 104	28.6% (21.6 to 36.8) 59.5% (54.3 to 64.5) 62.0% (57.7 to 66.1) 69.3% (65.4 to 73.0) 66.7% (60.4 to 72.4) 54.6% (52.5 to 56.6) 76.7% (74.0 to 79.2) 36.8% (34.3 to 39.3) 39.5% (35.5 to 43.7) 42.3% (33.3 to 51.9)	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Kubota 2008			136	66.9% (58.6 to 74.3)					
Piao 2010			735	68.8% (65.4 to 72.1)					
Nomura 2012			207	72.0% (65.5 to 77.7)					
Tajima 2015			100	89.0% (81.4 to 93.8)					
Garrido-Garcia 2017			399	67.7% (62.9 to 72.1)					
Gorrab 2016			146	30.8% (23.9 to 38.7)					
Kim 2017			14916	59.4% (58.6 to 60.2)					
Jun 2017			146	46.6% (38.7 to 54.7)					
Jun 2015			355	66.2% (61.1 to 70.9)					
Kim 2018			329	21.6% (17.5 to 26.3)					
Hu 2019			293	29.7% (24.8 to 35.2)					
Sittiwangkul 2011			170	33.5% (26.9 to 40.9)					
LuAnn Minich 2007			562	44.0% (39.9 to 48.1)					
Wang 2009			243	26.7% (21.6 to 32.6)					
Bal 2014			106	74.5% (65.5 to 81.9)					
Sehgal 2015			312	46.8% (41.3 to 52.3)					
Huang 2006			768	69.3% (65.9 to 72.4)					
				Median 59.4% IQR 38.2 to 68.3					

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants
6. Ruan 2013 groups data for children <6 months old and for children between 6 months to 5 years old
7. Li 2018 groups data for children <3 months old and for children over 3 months old
8. Kim 2009 groups data for children ≤5 months old and for children between 5 months to <5 years old
9. Yoon 2016 groups data for children ≤6 months old and for children over 6 months old
10. This study is one of two studies that formed the basis of the previous 2013 recommendations

At presentation: cervical lymphadenopathy

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Moore 2014 (primary care)	UK	All	74	35.1% (25.2 to 46.5) **Median 35.1% IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
Shiozawa 2013 (at time of presentation of principal symptoms other than fever)	Outside Europe	<2 year	51	35.3% (23.6 to 49.0)[4] **Median 35.3% IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
Shiozawa 2013 (at time of presentation of principal symptoms other than fever)	Outside Europe	≥2 year	49	75.5% (61.9 to 85.4)[4] **Median 75.5% IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
Shiozawa 2013 (day 5 of fever)	Outside Europe	<2 year	51	64.7% (51.0 to 76.4)[4] **Median 64.7% IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
Shiozawa 2013 (day 5 of fever)	Outside Europe	≥2 year	49	93.9% (83.9 to 97.9)[4] **Median 93.9% IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were partially direct
3. <33.3% of studies had >100 participants
4. Shiozawa 2013 groups data for children ≤2 years old and for children over 2 years old

Number of symptoms

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
0 symptoms: Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Moore 2014[5] (at first presentation)	UK	all	74	28.4% (19.4 to 38.5)	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
1 symptom **Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)**									
Moore 2014[5] (at first presentation)	UK	all	74	39.2% (28.9 to 50.6)	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
2 symptoms: **Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)**									
Moore 2014[5] (at first presentation)	UK	all	74	9.5% (4.7 to 18.3)	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
Shiozawa 2013[6] (at time of presentation of principal symptoms other than fever)	Outside Europe	<1 year	51	54.9% (41.4 to 67.7)[4]	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
Shiozawa 2013[6] (at time of presentation of principal symptoms other than fever)	Outside Europe	≥1 year	49	16.3% (8.51 to 29.0)[4]	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
3 symptoms: Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Moore 2014[5] (at first presentation)	UK	all	74	6.8% (2.9 to 14.9)	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
4 symptoms: Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Moore 2014[5] (at first presentation)	UK	all	74	5.4% (2.1 to 13.1)	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
5 symptoms: Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Moore 2014[5] (at first presentation)	UK	all	74	5.4% (2.1 to 13.1)	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
6 symptoms: Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Moore 2014[5] (at first presentation)	UK	all	74	1.4% (0.2 to 7.3)	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
7 symptoms: Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Moore 2014[5] (at first presentation)	UK	all	74	1.4% (0.2 to 7.3)	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
8 symptoms: Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Moore 2014[5] (at first presentation)	UK	all	74	2.7% (0.7 to 9.3)	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were partially direct
3. <33.3% of studies had >100 participants
4. Shiozawa 2013 groups data for children ≤2 years old and for children over 2 years old
5. Symptoms included Rash, Lymphadenopathy, Conjunctivitis, Red, dry, or cracked lips, Strawberry tongue, Redness in mouth, Peeling skin, Red palms/soles, Oedema
6. Symptoms included conjunctival injection, oral changes, polymorphous rash, changes in extremities, cervical lymphadenopathy

Other signs and symptoms

During course of illness: anterior uveitis

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Lee 2016	Outside Europe	All	111	36.9% (28.5 to 46.2) **Median 36.9% IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[3]	Very low
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Sanchez-Manubens 2016	Europe (not UK)	All	399	2.8% (1.55 to 4.87) **Median 2.8% IQR -**	Very serious[1]	Very serious[2]	n/a	Not serious	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
1. >33.3% of participants from studies at high risk of bias 2. >33.3% participants from studies that were indirect 3. <33.3% of studies had >300 participants									

During course of illness: arthralgia

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Sanchez-Manubens 2016	Europe (not UK)	All	399	2.8% (1.55 to 4.87) **Median 2.8%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Not serous	Very low
Boudiaf 2016	Outside Europe	All	133	24.1 (17.6 to 32.0) **Median 24.1%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[3]	Very low
1. >33.3% of participants from studies at high risk of bias 2. >33.3% participants from studies that were indirect 3. <33.3% of studies had >300 participants									

During course of illness: arthritis

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Sanchez-Manubens 2016	Europe (not UK)	All	399	13.8% (10.8 to 17.5) **Median 13.8%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Not serous	Very low
Boudiaf 2016	Outside Europe	All	133	7.5% (4.14 to 13.3)	Very serious[1]	Very serious[2]	n/a	Serious[3]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
				Median 7.5% IQR -					

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >300 participants

During course of illness: arthritis or arthralgia

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									
Manlhiot 2012 Behmadi 2019 Yun 2011 Sittiwangkul 2013	Outside Europe	All	738 105 83 147	12.6% (10.4 to 15.2) 6.7% (3.3 to 13.1) 15.7% (9.39 to 25.0) 4.1% (1.9 to 8.2) **Median 9.7% IQR 6.1 to 13.4**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Manlhiot 2012 Behmadi 2019 Yun 2011 Sittiwangkul 2013 Falcini 2012	Outside Europe	All	217 71 38 61 228	12.4% (8.7 to 17.5) 8.5% (3.93 to 17.2) 5.3% (1.5 to 17.3) 0.0% (0.0 to 5.9) 4.4% (2.4 to 7.9) **Median 5.3% IQR 4.4 to 8.5**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Generini 1997 Martins 2018 Tacke 2014	Europe (not UK)	All	73 63 319	1.4% (0.24 to 7.4) 12.7% (6.6 to 23.1) 10.3% (7.5 to 14.2)	Very serious[1]	Very serious[2]	Not serious	Very serious[3]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
				Median 10.3% IQR 5.9 to 11.5					
Saundankar 2014 Peng 2019 Shamsizedeh 2014 Gorrab 2016 Sehgal 2015 Baker 2009	Outside Europe	All	353 1420 104 146 312 198	21.0% (17.0 to 25.5) 10.6% (9.14 to 12.3) 14.4% (8.9 to 22.4) 30.8% (23.9 to 38.7) 8.3% (5.8 to 11.9) 14.6% (10.4 to 20.2) **Median 14.5% IQR 11.6 to 19.4**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants

During course of illness: BCG scar reaction

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									
Maric 2015	Europe (not UK)	All	78	10.3% (5.3 to 19.0) **Median 10.3% IQR -**	Very serious[1]	Very serious[2]	n/a	Very serious[3]	Very low
Tang 2016 Bai 2017 Chang 2014 Sittiwangkul 2013	Outside Europe	All	716 298 226 147	14.0% (11.6 to 16.7) 85.9% (81.5 to 89.4) 43.8% (37.5 to 50.3) 10.9% (6.81 to 17.0) **Median 28.9% IQR 13.2 to 54.3**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Incomplete Kawasaki disease (AHA criteria or equivalent)									

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Maric 2015	Europe (not UK)	All	33	6.1% (1.7 to 19.6) **Median 6.1%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Very serious[3]	Very low
Tang 2016 Bai 2017 Sittiwangkul 2013	Outside Europe	All	300 85 61	12.3% (9.1 to 16.5) 76.5% (66.4 to 84.2) 4.9% (1.7 to 13.5) **Median 12.3%** **IQR 8.6 to 44.4**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Ruan 2013 Li 2018 Loh 2019 Kim 2009 Teng 2012	Outside Europe	<1 year	49 40 99 22 109	18.4% (10.0 to 31.4)[6] 10.0% (4.0 to 23.1)[7] 69.7 (60.1 to 77.9) 72.7% (51.9 to 86.9)[8] 45.9% (36.8 to 55.2) **Median 45.9%** **IQR 18.4 to 72.7**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Ruan 2013 Li 2018 Loh 2019 Kim 2009 Teng 2012	Outside Europe	≥1 year	1160 160 180 131 242	3.4% (2.5 to 4.6)[6] 1.3% (0.34 to 4.4)[7] 27.8% (21.8 to 34.7) 33.6% (26.1 to 42.0)[8] 16.1% (12.0 to 21.2) **Median 16.1%** **IQR 3.4 to 27.8**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Boudiaf 2016 Zhang 2012 Piao 2010 Garrido-Garcia 2017 Kim 2018 Hu 2019	Outside Europe	All	133 577 735 399 329 293	1.5% (0.4 to 5.3) 1.7% (0.9 to 3.2) 1.1% (0.6 to 2.1) 24.3% (20.4 to 28.8) 25.5% (21.1 to 30.5) 36.9% (31.5 to 42.5)	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Uehara 2010			15524	49.9% (49.1 to 50.7) **Median 24.3%** **IQR 1.6 to 31.2**					

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants
6. Ruan 2013 groups data for children <6 months old and for children between 6 months to 5 years old
7. Li 2018 groups data for children <3 months old and for children over 3 months old
8. Kim 2009 groups data for children ≤5 months old and for children between 5 months to <5 years old

During course of illness: changes in the extremities: desquamation (and/or decrustation of at least 1 toe)

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									
Bai 2017 Tang 2016 Chang 2014	Outside Europe	All	298 716 226	97.7% (95.2 to 98.9) 68.3% (64.8 to 71.6) 95.6% (92.1 to 97.6) **Median 95.6%** **IQR 82.0 to 96.7**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Bai 2017 Tang 2016	Outside Europe	All	85 300	77.6% (67.7 to 85.2) 43.0% (37.5 to 48.7) **Median 60.3%** **IQR 51.7 to 69.0**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Ruan 2013	Outside Europe	<1 year	49	51.0% (37.5 to 64.4)[6] **Median 51.0%**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
				IQR -					
Ruan 2013	Outside Europe	≥1 year	1160	50.3% (47.5 to 53.2)[6] **Median 50.3%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low
Piao 2010 Sanchez-Manubens 2016 Chen 2016 Sun 2018 Kim 2018 Huang 2006[7]	Outside Europe	All	735 399 2304 1008 329 768	54.0% (50.4 to 57.6) 31.1% (26.7 to 35.8) 32.2% (30.3 to 34.1) 51.3% (48.2 to 54.4) 53.8% (48.4 to 59.1) 82.9% (80.1 to 85.4) **Median 52.6%** **IQR 37.0 to 54.0)**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants
6. Ruan 2013 groups data for children <6 months old and for children between 6 months to 5 years old
7. This study is one of two studies that formed the basis of the previous 2013 recommendations

At presentation: changes in the extremities: desquamation

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Moore 2014	UK	All	74	18.9% (11.6 to 29.3) **Median 18.9%** **IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were partially direct

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
3. <33.3% of studies had >100 participants									

During course of illness: changes in the extremities: oedema

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									
Tang 2016	Outside Europe	All	716	60.1% (56.4 to 63.6) **Median 60.1%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Tang 2016	Outside Europe	All	300	22.7% (18.3 to 27.7) **Median 22.7%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Sanchez-Manubens 2016	Europe (not UK)	All	399	32.8% (28.4 to 37.6) **Median 32.8%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Very serious[3]	Very low
Ruan 2013	Outside Europe	<1 year	49	59.2% (45.3 to 71.8)[6] **Median 59.2%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low
Ruan 2013	Outside Europe	≥1 year	1160	79.5% (77.1 to 81.7)[6] **Median 79.5%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low
Sun 2018 Bal 2014 Huang 2006[7]	Outside Europe	All	1008 106 768	44.0% (41.0 to 47.1) 47.2% (37.9 to 56.6) 48.0% (44.5 to 51.6) **Median 47.2%** **IQR 45.6 to 47.6**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
1. >33.3% of participants from studies at high risk of bias 2. >33.3% participants from studies that were indirect 3. <33.3% of studies had >100 participants 4. Confidence intervals were non-overlapping 5. <33.3% of studies had >300 participants 6. Ruan 2013 groups data for children <6 months old and for children between 6 months to 5 years old 7. This study is one of two studies that formed the basis of the previous 2013 recommendations									

At presentation: changes in the extremities: oedema

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Moore 2014	UK	All	74	13.5% (7.51 to 23.1) **Median 13.5%** **IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low
1. >33.3% of participants from studies at high risk of bias 2. >33.3% participants from studies that were partially direct 3. <33.3% of studies had >100 participants									

During course of illness: changes in the extremities: red palms/soles

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Sanchez-Manubens 2016	Europe (not UK)	All	399	29.1% (24.8 to 33.7) **Median 29.1%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Very serious[3]	Very low
Ruan 2013	Outside Europe	<1 year	49	87.8% (75.8 to 94.3)[6] **Median 87.8%**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
				IQR -					
Ruan 2013	Outside Europe	≥1 year	1160	83.3% (81.0 to 85.3)[6] **Median 83.3%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low
Sun 2018	Outside Europe	All	1008	78.3% (75.6 to 80.7) **Median 78.3%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants
6. Ruan 2013 groups data for children <6 months old and for children between 6 months to 5 years old

At presentation: changes in the extremities: red palms/soles

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Moore 2014	UK	All	74	17.6% (10.6 to 27.8) **Median 17.6%** **IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were partially direct
3. <33.3% of studies had >100 participants

During course of illness: desquamation

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Teng 2012	Outside Europe	<1 year	109	50.5% (41.2 to 59.7) **Median 50.5%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low
Teng 2012	Outside Europe	≥1 year	242	40.5% (34.5 to 46.8) **Median 40.5%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low
Bal 2014	Outside Europe	All	106	24.5% (17.3 to 33.5) **Median 24.5%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants

During course of illness: anal desquamation

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									
Tang 2016 Bai 2017 Chang 2014	Outside Europe	All	716 298 226	43.7% (40.1 to 47.4) 46.0% (40.4 to 51.7) 24.3% (19.2 to 30.3) **Median 43.7%** **IQR 34.0 to 44.9**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Tang 2016 Bai 2017 Falcini 2012	Outside Europe	All	300 85 24	38.3% (33.0 to 44.0) 51.8% (41.3 to 62.1) 10.5% (7.2 to 15.2)	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
				Median 38.3% IQR 24.4 to 45.1					
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Ruan 2013 Kim 2009 Liu 2012	Outside Europe	<1 year	49 22 65	30.6% (19.5 to 44.5)[6] 4.5% (0.8 to 21.8)[7] 13.8% (7.5 to 24.3) **Median 13.8% IQR 9.2% to 22.2%**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Ruan 2013 Kim 2009 Liu 2012	Outside Europe	≥1 year	1160 131 80	40.5% (37.7 to 43.4)[6] 11.5% (7.1 to 18.0)[7] 20.0% (12.7 to 30.1) **Median 20.0% IQR 15.8 to 30.3**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Boudiaf 2016 Saundankar 2014 Zhang 2016 Zhang 2012 Sun 2018 Shamsizadeh 2014 Piao 2010 Wang 2009 Huang 2006[8]	Outside Europe	All	133 353 518 577 1008 104 735 243 768	83.5% (76.2 to 88.8) 16.1% (12.7 to 20.4) 22.8% (19.4 to 26.6) 34.7% (30.9 to 38.6) 29.2% (26.4 to 32.1) 31.7% (23.6 to 41.2) 6.4% (4.8 to 8.4) 67.9% (61.8 to 73.5) 45.2% (41.7 to 48.7) **Median 31.7% IQR 22.8 to 45.2**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants
6. Ruan 2013 groups data for children <6 months old and for children between 6 months to 5 years old

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
7. Kim 2009 groups data for children ≤5 months old and for children between 5 months to <5 years old 8. This study is one of two studies that formed the basis of the previous 2013 recommendations									

During course of illness: gastrointestinal symptoms

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									
Manlhiot 2012 Yun 2011	Outside Europe	All	738 83	31.6% (28.3 to 35.0) 32.5% (23.4 to 43.2) **Median 32.1%** **IQR 31.8 to 32.3**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Manlhiot 2012 Yun 2011 Falcini 2012	Outside Europe	All	217 38 228	33.2% (27.3 to 39.7) 36.8% (23.4 to 52.7) 4.4% (2.4 to 7.9) **Median 33.2%** **IQR 18.8 to 35.0**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Tacke 2014 Fabi 2018	Europe (not UK)	All	319 302	26.3% (21.8 to 31.4) 35.1% (29.9 to 40.6) **Median 30.7%** **IQR 28.5 to 32.9**	Very serious[1]	Very serious[2]	Not serious	Very serious[3]	Very low
Teng 2012	Outside Europe	<1 year	109	18.3% (12.2 to 26.7) **Median 18.3%** **IQR -**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Teng 2012	Outside Europe	≥1 year	242	20.2% (15.7 to 25.8) **Median 20.2%** **IQR -**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Sehgal 2015 Saundankar 2014	Outside Europe	All	312 353	55.1% (49.6 to 60.6) 54.1% (48.9 to 59.2)	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Chen 2016 Gamez-Gonzalez 2013 Baker 2009			2304 214 198	27.5% (25.7 to 29.3) 33.2% (27.2 to 39.7) 60.6% (53.7 to 67.2) **Median 54.1%** **IQR 33.2 to 55.1**					

4. >33.3% of participants from studies at high risk of bias
5. >33.3% participants from studies that were indirect
6. <33.3% of studies had >100 participants
7. Confidence intervals were non-overlapping
8. <33.3% of studies had >300 participants

During course of illness: gastrointestinal symptoms: abdominal pain

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									
Bai 2017 Yun 2011	Outside Europe	All	298 83	75.2% (70.0 to 79.7) 9.6% (5.0 to 17.9) **Median 42.4%** **IQR 26.0 to 58.8**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Bai 2017 Yun 2011	Outside Europe	All	85 38	64.7% (54.1 to 74.0) 18.4% (9.2 to 33.4) **Median 41.6%** **IQR 23.0 to 53.1**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Boudiaf 2016 Gamez-Gonzalez 2013 Gorrab 2016 Baker 2009	Outside Europe	All	133 214 146 198	22.6% (16.3 to 30.4) 15.9% (11.6 to 21.4) 22.6% (16.6 to 30.0) 17.7% (13.0 to 23.6) **Median 20.2%**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
				IQR 17.3 to 22.6					

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants

During course of illness: gastrointestinal symptoms: decreased food/fluid intake

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Shamsizadeh 2014 Baker 2009	Outside Europe	All	104 198	34.6% (26.2 to 44.2) 36.9% (30.5 to 43.8) **Median 35.8%** **IQR 35.2 to 36.3**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants

During course of illness: gastrointestinal symptoms: diarrhoea

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									
Behmadi 2019 Yun 2011 Chang 2014 Sittiwangkul 2013	Outside Europe	All	105 83 226 147	8.6% (4.6 to 15.5) 14.5% (8.5 to 23.6) 45.1% (38.8 to 51.7) 48.3% (40.4 to 56.3)	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
				Median 29.8% IQR 13.0 to 45.9					
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Behmadi 2019 Yun 2011 Sittiwangkul 2013	Outside Europe	All	71 38 61	18.3% (11.0 to 28.9) 18.4% (9.2 to 33.4) 44.3% (32.5 to 56.7) **Median 18.4% IQR 18.4 to 31.4**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Boudiaf 2016 Zhang 2016 Shamsizadeh 2014 Gamez-Gonzalez 2013 Gorrab 2016 Baker 2009	Outside Europe	All	133 518 104 214 146 198	15.0% (10.0 to 22.1) 3.3% (2.1 to 5.2) 17.3% (11.2 to 25.7) 15.9% (11.6 to 21.4) 25.3% (19.0 to 33.0) 26.3% (20.6 to 32.8) **Median 16.6% IQR 15.2 to 23.3**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants

During course of illness: gastrointestinal symptoms: diarrhoea and/or abdominal pain

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Generini 1997	Europe (not UK)	All	73	19.2% (11.8 to 29.7) **Median 19.2% IQR -**	Very serious[1]	Very serious[2]	n/a	Very serious[3]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
1. >33.3% of participants from studies at high risk of bias 2. >33.3% participants from studies that were indirect 3. <33.3% of studies had >100 participants 4. Confidence intervals were non-overlapping 5. <33.3% of studies had >300 participants									

During course of illness: gastrointestinal symptoms: diarrhoea and/or vomiting

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Stemberger Maric 2018	Europe (not UK)	All	110	46.4% (37.3 to 55.7) **Median 46.4%** **IQR -**	Very serious[1]	Very serious[2]	Not serious	Very serious[3]	Very low
Li 2018 Liu 2012	Outside Europe	<1 year	40 65	42.5% (28.5 to 57.8)[6] 40.0% (29.0 to 52.1) **Median 41.3%** **IQR 40.6 to 41.9**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Li 2018 Liu 2012	Outside Europe	≥1 year	160 80	16.9% (11.9 to 23.4)[6] 23.8% (15.8 to 34.1) **Median 20.4%** **IQR 18.6 to 22.1**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
1. >33.3% of participants from studies at high risk of bias 2. >33.3% participants from studies that were indirect 3. <33.3% of studies had >100 participants 4. Confidence intervals were non-overlapping 5. <33.3% of studies had >300 participants 6. Li 2018 groups data for children <3 months old and for children over 3 months old 7. Kim 2009 groups data for children ≤5 months old and for children between 5 months to <5 years old									

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
8. Yoon 2016 groups data for children ≤6 months old and for children over 6 months old									

During course of illness: gastrointestinal symptoms: hepatomegaly

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									
Bai 2017	Outside Europe	All	298	82.9% (78.2 to 86.7) **Median 82.9%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Bai 2017	Outside Europe	All	85	62.4% (51.7 to 71.9) **Median 62.4%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Shamsizadeh 2014	Outside Europe	All	104	6.7% (3.3 to 13.3) **Median 6.7%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants

During course of illness: gastrointestinal symptoms: jaundice

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Generini 1997 Sanchez-Manubens 2016 Tacke 2014	Europe (not UK)	All	73 399 319	2.7% (0.75 to 9.45) 5.3% (3.5 to 7.9) 1.9% (0.9 to 4.0) **Median 2.7%** **IQR 2.3 to 4.0**	Very serious[1]	Very serious[2]	Not serious	Very serious[3]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants

During course of illness: gastrointestinal symptoms: vomiting

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									
Behmadi 2019 Yun 2011 Sittiwangkul 2013	Outside Europe	All	105 83 147	6.7% (3.3 to 13.1) 19.3% (12.2 to 29.0) 10.9% (6.8 to 17.0) **Median 10.9%** **IQR 8.8 to 15.1**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Behmadi 2019 Yun 2011 Sittiwangkul 2013	Outside Europe	All	71 38 61	18.3% (11.0 to 28.9) 15.8% (7.4 to 30.4) 8.2% (3.6 to 17.8) **Median 15.8%** **IQR 12.0 to 17.1**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Sanchez-Manubens 2016	Europe (not UK)	All	399	24.1% (20.1 to 28.5) **Median 24.1%** **IQR -**	Very serious[1]	Very serious[2]	Not serious	Very serious[3]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Boudiaf 2016 Zhang 2016 Shamsizadeh 2014 Gamez-Gonzalez 2013 Gorrab 2016 Baker 2009	Outside Europe	All	133 518 104 214 146 198	21.1% (15.0 to 28.7) 2.3% (1.3 to 4.0) 23.1% (16.0 to 32.1) 20.1% (15.3 to 26.0) 27% (20.8 to 35.1) 44.4% (37.7 to 51.4) **Median 22.1%** **IQR 20.4 to 26.0**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants

During course of illness: irritability

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									
Manlhiot 2012 Bai 2017 Sittiwangkul 2013	Outside Europe	All	738 298 147	13.4% (11.1 to 16.1) 89.3% (85.2 to 92.3) 82.3% (75.4 to 87.6) **Median 82.3%** **IQR 47.9 to 85.8**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Manlhiot 2012 Bai 2017 Sittiwangkul 2013	Outside Europe	All	217 85 61	12.9% (9.1 to 18.0) 76.5% (66.4 to 84.2) 73.8% (61.6 to 83.2) **Median 73.8%**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
				IQR 43.4 to 75.2					
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Sanchez-Manubens 2016	Europe (not UK)	All	399	29.8% (25.6 to 34.5) **Median 29.8%** **IQR -**	Very serious[1]	Very serious[2]	Not serious	Very serious[3]	Very low
Saundankar 2014 Shamsizadeh 2014 Baker 2009	Outside Europe	All	353 104 198	85.0% (80.9 to 88.3) 26.0% (18.5 to 35.1) 49.5% (42.6 to 56.4) **Median 49.5%** **IQR 37.8 to 67.3**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants

During course of illness: lassitude

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									
Manlhiot 2012 Bai 2017	Outside Europe	All	738 298	5.4% (4.0 to 7.3) 88.6% (84.5 to 91.7) **Median 47.0%** **IQR 26.2 to 67.8**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Manlhiot 2012 Bai 2017	Outside Europe	All	217 85	6.0% (3.5 to 10.0) 78.8% (69.0 to 86.2) **Median 42.4%** **IQR 24.2 to 60.6**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Baker 2009	Outside Europe	All	198	18.7% (13.9 to 24.7) **Median 18.7%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants

During course of illness: limb sclerosis

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									
Bai 2017	Outside Europe	All	298	37.9% (32.6 to 43.6) **Median 37.9%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Bai 2017	Outside Europe	All	85	63.5% (52.9 to 73.0) **Median 63.5%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants

During course of illness: oral changes: red, dry or cracked lips

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									
Tang 2016	Outside Europe	All	716	90.9% (88.6 to 92.8) **Median 90.9%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Tang 2016	Outside Europe	All	300	65.0% (59.4 to 70.2) **Median 65.0%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Sanchez-Manubens 2016	Europe (not UK)	All	399	65.7% (60.9 to 70.2) **Median 65.7%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Very serious[3]	Very low
Ruan 2013	Outside Europe	<1 year	49	73.5% (59.7 to 83.8)[6] **Median 73.5%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low
Ruan 2013	Outside Europe	≥1 year	1160	89.9% (88.1 to 91.5)[6] **Median 89.9%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low
Sun 2018	Outside Europe	All	1008	83.6% (81.2 to 85.8) **Median 83.6%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants
6. Ruan 2013 groups data for children <6 months old and for children between 6 months to 5 years old

At presentation: oral changes: red, dry or cracked lips

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Moore 2014	UK	All	74	31.1% (21.7 to 42.3)	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were partially direct
3. <33.3% of studies had >100 participants

At presentation: oral changes: redness in mouth

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Moore 2014	UK	All	74	23.0% (14.9 to 33.8) **Median 23.0%** **IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were partially direct
3. <33.3% of studies had >100 participants

During course of illness: oral changes: strawberry tongue

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									
Tang 2016	Outside Europe	All	716	76.8% (73.6 to 79.8) **Median 76.8%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Tang 2016	Outside Europe	All	300	45.3% (39.8 to 51.0) **Median 45.3%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Sanchez-Manubens 2016	Europe (not UK)	All	399	55.6% (50.7 to 60.4) **Median 55.6%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Very serious[3]	Very low
Ruan 2013	Outside Europe	<1 year	49	34.7% (22.9 to 48.7)[6] **Median 34.7%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low
Ruan 2013	Outside Europe	≥1 year	1160	58.9% (56.0 to 61.7)[6] **Median 58.9%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low
Sun 2018	Outside Europe	All	1008	71.6% (68.8 to 74.3) **Median 71.6%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants
6. Ruan 2013 groups data for children <6 months old and for children between 6 months to 5 years old

At presentation: oral changes: strawberry tongue

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Moore 2014	UK	All	74	24.3% (16.0 to 35.2) **Median 24.3%** **IQR -**	Very serious[1]	Serious[2]	n/a	Very serious[3]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were partially direct

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
3. <33.3% of studies had >100 participants									

During course of illness: otitis media

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									
Manlhiot 2012	Outside Europe	All	738	8.0% (6.25 to 10.2) **Median 8.0%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Manlhiot 2012	Outside Europe	All	217	7.8% (5.0 to 12.2) **Median 7.8%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Serious[5]	Very low
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Generini 1997 Tacke 2014	Europe (not UK)	All	73 319	1.4% (0.24 to 7.4) 11.9% (8.8 to 15.9) **Median 6.7%** **IQR 4.0 to 9.3**	Very serious[1]	Very serious[2]	Not serious	Very serious[3]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants

During course of illness: respiratory symptoms

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Manlhiot 2012 Yun 2011 Sittiwangkul 2013	Outside Europe	All	738 83 147	32.8% (29.5 to 36.3) 55.4% (44.7 to 65.6) 38.8% (31.3 to 46.8) **Median 38.8%** **IQR 35.8 to 47.1**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Manlhiot 2012 Yun 2011 Falcini 2012 Sittiwangkul 2013	Outside Europe	All	217 38 228 61	35.5% (29.4 to 42.1) 52.6% (37.3 to 67.5) 6.1% (3.7 to 10.0) 39.3% (28.1 to 51.9) **Median 37.4%** **IQR 28.2 to 42.6**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Stemberger Maric 2018	Europe (not UK)	All	110	54.5% (45.2 to 63.5)	Very serious[1]	Very serious[2]	Not serious	Very serious[3]	Very low
Saundankar 2014 Zhang 2016 Chen 2016	Outside Europe	All	353 518 2304	33.1% (28.4 to 38.2) 35.9% (31.9 to 40.1) 31.0% (29.2 to 33.0) **Median 34.5%** **IQR 32.6 to 40.6**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants

During course of illness: respiratory symptoms: infection

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Generini 1997	Europe (not UK)	All	73	17.8% (10.7 to 28.1) **Median 17.8%** **IQR -**	Very serious[1]	Very serious[2]	n/a	Very serious[3]	Very low
Li 2018 Liu 2012	Outside Europe	<1 year	40 65	55.0% (39.8 to 69.3)[6] 60.0% (47.9 to 71.0) **Median 57.5%** **IQR 56.3 to 58.8**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Li 2018 Liu 2012	Outside Europe	≥1 year	160 80	21.3% (15.6 to 28.2)[6] 43.8% (33.4 to 54.7) **Median 32.6%** **IQR 26.9 to 38.2**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants
6. Li 2018 groups data for children <3 months old and for children over 3 months old

During course of illness: respiratory symptoms: sputum

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									
Yun 2011	Outside Europe	All	83	10.8% (5.8 to 19.3) **Median 10.8%** **IQR -**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Yun 2011	Outside Europe	All	38	23.7% (13.0 to 39.2) **Median 23.7%**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
				IQR -					

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants

During course of illness: respiratory symptoms: cough

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									
Yun 2011 Chang 2014	Outside Europe	All	83 226	47.0% (36.6 to 57.6) 69.5% (63.2 to 75.1) **Median 58.3%** **IQR 52.6 to 63.9**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Tacke 2014	Europe (not UK)	All	319	16.9% (13.2 to 21.4) **Median 16.9%** **IQR -**	Very serious[1]	Very serious[2]	Not serious	Very serious[3]	Very low
Yun 2011	Outside Europe	All	38	44.7% (30.2 to 60.3) **Median 44.7%** **IQR -**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Shamsizadeh 2014 Baker 2009 Zhang 2016	Outside Europe	All	104 198 518	12.5% (7.5 to 20.2) 27.8% (22.0 to 34.4) 12.2% (9.62 to 15.3) **Median 12.5%** **IQR 12.4 to 20.2**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
3. <33.3% of studies had >100 participants 4. Confidence intervals were non-overlapping 5. <33.3% of studies had >300 participants									

During course of illness: respiratory symptoms: rhinorrhoea

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical Kawasaki disease (AHA criteria or equivalent)									
Yun 2011 Chang 2014	Outside Europe	All	83 226	30.1% (21.3 to 40.7) 57.5% (51.0 to 63.8) **Median 43.8%** **IQR 37.0 to 50.7**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Incomplete Kawasaki disease (AHA criteria or equivalent)									
Yun 2011	Outside Europe	All	38	31.6% (19.1 to 47.5) **Median 31.6%** **IQR -**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Baker 2009 Shamsizadeh 2014	Outside Europe	All	198 104	18.7% (13.9 to 24.7) 29.8% (21.9 to 39.2) **Median 24.3%** **IQR 21.5 to 27.0**	Very serious[1]	Very serious[2]	Serious[4]	Serious[5]	Very low
1. >33.3% of participants from studies at high risk of bias 2. >33.3% participants from studies that were indirect 3. <33.3% of studies had >100 participants 4. Confidence intervals were non-overlapping 5. <33.3% of studies had >300 participants									

During course of illness: respiratory symptoms: pharyngitis

Studies	Location	Age	Sample size	% with Symptom (95% CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
Typical + Incomplete Kawasaki disease (AHA criteria or equivalent)									
Sanchez-Manubens 2016	Europe (not UK)	All	399	49.6% (44.8 to 54.5) **Median 49.6% IQR -**	Very serious[1]	Very serious[2]	n/a	Very serious[3]	Very low

1. >33.3% of participants from studies at high risk of bias
2. >33.3% participants from studies that were indirect
3. <33.3% of studies had >100 participants
4. Confidence intervals were non-overlapping
5. <33.3% of studies had >300 participants

Case control

No. of studies	Study design	Sample size	Sensitivity (95%CI)	Specificity (95%CI)	Effect size (95%CI)	Risk of bias	Indirectness	Inconsistency	Imprecision	Quality
BCG scar activation Typical + incomplete Kawasaki disease, Outside Europe, all ages[3]										
1 (Loh 2019)	Case control	370	0.43 (0.37, 0.49)	0.90 (0.82, 0.95)	LR+ 4.31 (2.29, 8.14)	Very serious[1]	Serious	N/A	Not serious	Very low
					LR- 0.64 (0.56, 0.72)	Very serious[1]	Serious	N/A	Not serious	Very low

1. >33.3% of studies were at high risk of bias
2. >33.3% of studies were partially applicable
3. Study presented sensitivity/specificity for under/over 1s separately, but data was not available to construct 2*2 tables for these subgroups and partial data was internally inconsistent

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Appendix G – Excluded studies

Clinical studies

Study	Code [Reason]
Abuhammour, W. and Yousef, N. (2008) Incomplete Kawasaki disease: Experience with 14 patients with cardiac complications. Journal of Pediatric Infectious Diseases 3(2): 91-95	- Study conducted outside Europe and had fewer than 100 patients
Almeida, Rozana Gasparello de, Goldenzon, Andrea Valentim, Rodrigues, Marta Cristine Felix et al. (2010) Profile of Kawasaki disease in children referred to two pediatric rheumatology services in Rio de Janeiro, Brazil. Revista brasileira de reumatologia 50(5): 529-38	- Study not reported in English
Alvarez, Eva Pilar, Rey, Francis, Pena, Sara Carolina et al. (2017) Has joint involvement lessened in Kawasaki disease? La enfermedad de Kawasaki ha perdido su afectacion articular? 13(3): 145-149	- Study happened within Europe but outside of the UK and had fewer than 50 patients with Kawasaki disease.
Arditi, M. (2013) Validation of a bedside, on-line/smartphone algorithm to differentiate Kawasaki Disease from other febrile illnesses. Journal of Pediatrics 162(5): 1077-1079	- No data on the signs and symptoms. This study was excluded on the basis of our systematic review protocol.
Berdej-Szczot, Elzbieta, Malecka-Tendera, Ewa, Gawlik, Tomasz et al. (2017) Risk factors of immunoglobulin resistance and coronary complications in children with Kawasaki disease. Kardiologia polska 75(3): 261-266	- No data on the signs and symptoms.
Dietz, Sanne M., Kuipers, Irene M., Tacke, Carline E. A. et al. (2017) Giant aneurysms: A gender-specific complication of Kawasaki disease? Journal of cardiology 70(4): 359-365	- No data on the signs and symptoms.
Doan, Son, Maehara, Cleo K., Chaparro, Juan D. et al. (2016) Building a Natural Language Processing Tool to Identify Patients With High Clinical Suspicion for Kawasaki Disease from Emergency Department Notes. Academic emergency medicine: official journal of the Society for Academic Emergency Medicine 23(5): 628-36	- No data on the signs and symptoms.
Edwards, M., Tinoco-Mendoza, G., Tovmassian, D. et al. (2015) Kawasaki disease in Campbelltown, a suburban hospital. Journal of Paediatrics and Child Health 51(4): 466-467	- This study has been reported in the form of a letter. Therefore, it has not been peer-reviewed.
Ekici, Filiz; Kocabas, Abdullah; Cetin, Ilker (2014) Is there any difference in clinical features of Turkish children with Kawasaki disease? Anadolu kardiyoloji dergisi : AKD = the Anatolian journal of cardiology 14(7): 646-7	- Study happened outside Europe and had fewer than 100 patients
Fukuda, Sayaka, Ito, Shuichi, Oana, Shinji et al. (2013) Late development of coronary artery abnormalities could be associated with persistence of non-fever symptoms in Kawasaki disease. Pediatric rheumatology online journal 11(1): 28	- Study happened outside Europe and had fewer than 100 patients

Study	Code [Reason]
Garcia Rodriguez, F., Flores Pineda, A. D. J., Villarreal Trevino, A. V. et al. (2016) Kawasaki disease at a pediatric hospital in Mexico. Boletin Medico del Hospital Infantil de Mexico 73(3): 166-173	- This study is not written in English.
Grasa, C. D., Fernandez-Cooke, E., Sanchez-Manubens, J. et al. (2019) Kawasaki disease in infants 3 months of age and younger: A multicentre Spanish study. Annals of the Rheumatic Diseases 78(2): 289-290	- Study happened within Europe but outside of the UK and had fewer than 50 patients with Kawasaki disease.
Guleria, Sandesh, Bhattarai, Dharmagat, Pilania, Rakesh Kumar et al. (2018) Koplik Spots: A Physical Finding That Should Never Be Missed in Children With Suspected Kawasaki Disease. Journal of clinical rheumatology: practical reports on rheumatic & musculoskeletal diseases	- This is a case study.
Hao, Shiying, Jin, Bo, Tan, Zhou et al. (2016) A Classification Tool for Differentiation of Kawasaki Disease from Other Febrile Illnesses. The Journal of pediatrics 176: 114-120.e8	- This study assesses an algorithm that requires knowledge of laboratory investigations. It does not have separate data that assesses the signs and symptoms alone.
Heuclin, T., Dubos, F., Hue, V. et al. (2009) Increased Detection Rate of Kawasaki Disease Using New Diagnostic Algorithm, Including Early Use of Echocardiography. Journal of Pediatrics 155(5): 695	- Study happened within Europe but outside of the UK and had fewer than 50 patients with Kawasaki disease.
Hua, Wang, Ma, Feiyue, Wang, Ying et al. (2019) A new scoring system to predict Kawasaki disease with coronary artery lesions. Clinical rheumatology 38(4): 1099-1107	- No data on the signs and symptoms.
Huang, W. C., Huang, L. M., Chang, I. S. et al. (2009) Epidemiologic features of Kawasaki disease in Taiwan, 2003 2006. Pediatrics 123(3): e401-e405	- This is an epidemiological study about incidence rates. Signs and symptoms were beyond the scope of the study.
Huang, Xijing, Huang, Ping, Zhang, Li et al. (2015) Influenza infection and Kawasaki disease. Revista da Sociedade Brasileira de Medicina Tropical 48(3): 243-8	- Study happened outside Europe and had fewer than 100 patients [This study looks at a small subset (45) of the 1,053 Kawasaki disease cases mentioned in the abstract.]
Huang, Ying-Hsien, Lin, Kuan-Miao, Ho, Shu-Chen et al. (2019) Increased Incidence of Kawasaki Disease in Taiwan in Recent Years: A 15 Years Nationwide Population-Based Cohort Study. Frontiers in pediatrics 7: 121	- This is an epidemiological study about incidence rates. Signs and symptoms were beyond the scope of the study.
Jakob, A., Whelan, J., Kordecki, M. et al. (2016) Kawasaki Disease in Germany: A Prospective, Population-based Study Adjusted for Underreporting. Pediatric Infectious Disease Journal 35(2): 129-134	- No data on the signs and symptoms.
Jakob, Andre, von Kries, Rudiger, Horstmann, Judith et al. (2018) Failure to Predict High-risk Kawasaki Disease Patients in a Population-based Study Cohort in Germany. The Pediatric infectious disease journal 37(9): 850-855	- No data on the signs and symptoms.
James, R. and Burgner, D. (2015) Orange-brown chromonychia in Kawasaki disease. Archives of Disease in Childhood 100(9): 872	- This is a case study.

Study	Code [Reason]
Juan, Chien-Chang, Hwang, Betau, Lee, Pi-Chang et al. (2007) The clinical manifestations and risk factors of a delayed diagnosis of Kawasaki disease. Journal of the Chinese Medical Association: JCMA 70(9): 374-9	- Study happened outside Europe and had fewer than 100 patients
Kang, Hye Jin; Kim, Gee Na; Kil, Hong Ryang (2013) Changes of clinical characteristics and outcomes in patients with Kawasaki disease over the past 7 years in a single center study. Korean journal of pediatrics 56(9): 389-95	- No data on the signs and symptoms.
Kayiran, Sinan Mahir; Dindar, Aygun; Gurakan, Berkan (2010) An evaluation of children with Kawasaki disease in Istanbul: a retrospective follow-up study. Clinics (Sao Paulo, Brazil) 65(12): 1261-5	- Study happened outside Europe and had fewer than 100 patients
Kim, Gi Beom, Han, Ji Whan, Park, Yong Won et al. (2014) Epidemiologic features of Kawasaki disease in South Korea: data from nationwide survey, 2009-2011. The Pediatric infectious disease journal 33(1): 24-7	- This is an epidemiological study about incidence rates. Signs and symptoms were beyond the scope of the study.
Kim, Jae-Jung, Hong, Young Mi, Yun, Sin Weon et al. (2012) Assessment of risk factors for Korean children with Kawasaki disease. Pediatric cardiology 33(4): 513-20	- No data on the signs and symptoms.
Kim, Taeyeun, Choi, Wooksun, Woo, Chan-Wook et al. (2007) Predictive risk factors for coronary artery abnormalities in Kawasaki disease. European journal of pediatrics 166(5): 421-5	- No data on the signs and symptoms.
Kyung Sim, B., Park, H., Kim, J. J. et al. (2019) Assessment of the clinical heterogeneity of Kawasaki disease using genetic variants of BLK and FCGR2A. Korean Circulation Journal 49(1): 99-108	- No data on the signs and symptoms.
Lin, Ming-Chih, Lai, Mei-Shu, Jan, Sheng-Ling et al. (2015) Epidemiologic features of Kawasaki disease in acute stages in Taiwan, 1997-2010: effect of different case definitions in claims data analysis. Journal of the Chinese Medical Association: JCMA 78(2): 121-6	- This is an epidemiological study about incidence rates. Signs and symptoms were beyond the scope of the study.
Lin, R. Y. and Krata, L. M. (2010) Trends in kawasaki disease hospitalizations: New York state 1990-2009. Internet Journal of Asthma, Allergy and Immunology 8(1)	- This is an epidemiological study about incidence rates. Signs and symptoms were beyond the scope of the study. [Although some data was collected on conjunctivitis, the intention of the database was not to document medical records. The aim of the database was to measure the costs of care.]
Ling, Xuefeng B., Kanegaye, John T., Ji, Jun et al. (2013) Point-of-care differentiation of Kawasaki disease from other febrile illnesses. The Journal of pediatrics 162(1): 183-188.e3	- This study is about the development of a diagnostic algorithm for Kawasaki disease. Details of how it works is not provided. There is no useful data such as diagnostic yield.
Ling, Xuefeng B., Lau, Kenneth, Kanegaye, John T. et al. (2011) A diagnostic algorithm combining clinical and molecular data distinguishes Kawasaki disease from other febrile illnesses. BMC medicine 9: 130	- This study assesses an algorithm that requires knowledge of laboratory investigations. It does not have separate data that assesses the signs and symptoms alone.

Study	Code [Reason]
Lue, Hung-Chi, Chen, Lei-Ru, Lin, Ming-Tai et al. (2014) Epidemiological features of Kawasaki disease in Taiwan, 1976-2007: results of five nationwide questionnaire hospital surveys. Pediatrics and neonatology 55(2): 92-6	- This is an epidemiological study about incidence rates. Signs and symptoms were beyond the scope of the study.
Manlhiot, C., O'Shea, S., Bernknopf, B. et al. (2018) Epidemiology of Kawasaki Disease in Canada 2004 to 2014: Comparison of Surveillance Using Administrative Data vs Periodic Medical Record Review. Canadian Journal of Cardiology 34(3): 330-332	- This is an epidemiological study about incidence rates. Signs and symptoms were beyond the scope of the study.
Mao, Youying, Yin, Lei, Xia, Hui et al. (2016) Incidence and clinical features of paediatric vasculitis in Eastern China: 14-year retrospective study, 1999-2013. The Journal of international medical research 44(3): 710-7	- This is an epidemiological study about incidence rates. Signs and symptoms were beyond the scope of the study.
Muta, Hiromi, Ishii, Masahiro, Iemura, Motofumi et al. (2007) Effect of revision of Japanese diagnostic criterion for fever in Kawasaki disease on treatment and cardiovascular outcome. Circulation journal: official journal of the Japanese Circulation Society 71(11): 1791-3	- No data on the signs and symptoms.
Nakamura, Yosikazu, Yashiro, Mayumi, Sadakane, Atsuko et al. (2009) Six principal symptoms and coronary artery sequelae in Kawasaki disease. Pediatrics international: official journal of the Japan Pediatric Society 51(5): 705-8	- No data on the signs and symptoms.
Nakamura, Yosikazu, Yashiro, Mayumi, Uehara, Ritei et al. (2008) Epidemiologic features of Kawasaki disease in Japan: results from the nationwide survey in 2005-2006. Journal of epidemiology 18(4): 167-72	- This is an epidemiological study about incidence rates. Signs and symptoms were beyond the scope of the study.
No, Sol Ji, Kim, Dong Ouk, Choi, Kyong Min et al. (2013) Do predictors of incomplete Kawasaki disease exist for infants? Pediatric cardiology 34(2): 286-90	- No data on the signs and symptoms.
Ozeki, Y., Yamada, F., Saito, A. et al. (2018) Epidemiologic features of Kawasaki disease distinguished by seasonal variation: an age-specific analysis. Annals of Epidemiology 28(11): 796-800	- This is an epidemiological study about incidence rates. Signs and symptoms were beyond the scope of the study.
Ozeki, Yukie, Yamada, Fumiya, Kishimoto, Tsuyoshi et al. (2017) Epidemiologic features of Kawasaki disease: Winter versus summer. Pediatrics international: official journal of the Japan Pediatric Society 59(7): 821-825	- This is an epidemiological study about incidence rates. Signs and symptoms were beyond the scope of the study.
Ozen, S., Bakkaloglu, A., Dusunsel, R. et al. (2007) Childhood vasculitides in Turkey: A nationwide survey. Clinical Rheumatology 26(2): 196-200	- This is an epidemiological study about incidence rates. Signs and symptoms were beyond the scope of the study.
Rezai, Mohammad Sadegh and Shahmohammadi, Soheila (2014) Erythema at BCG Inoculation Site in Kawasaki Disease Patients. Materia socio-medica 26(4): 256-60	- This study is a review article. The reference list was checked to ensure that we have included studies that meet our inclusion and exclusion criteria.
Rhim, Jung-Woo, Youn, You-Sook, Han, Ji-Whan et al. (2014) Changes in Kawasaki disease during 2 decades at a single institution in Daejeon, Korea. The Pediatric infectious disease journal 33(4): 372-5	- No data on the signs and symptoms.

Study	Code [Reason]
Saguil, A., Fargo, M., Grogan, S. et al. (2015) Diagnosis and management of kawasaki disease. American Family Physician 91(6): 365-371	- This is a narrative review. There is no study data.
Salo, Eeva, Griffiths, Elizabeth P., Farstad, Teresa et al. (2012) Incidence of Kawasaki disease in northern European countries. Pediatrics international: official journal of the Japan Pediatric Society 54(6): 770-2	- This is an epidemiological study about incidence rates. Signs and symptoms were beyond the scope of the study.
Shapiro, Cal, Maenz, Lynn, Hossain, Alomgir et al. (2007) Onset to first visit intervals in childhood rheumatic diseases. The Journal of rheumatology 34(9): 1913-7	- No data on the signs and symptoms.
Singh, S., Gupta, M. K., Bansal, A. et al. (2007) A comparison of the clinical profile of Kawasaki disease in children from Northern India above and below 5 years of age. Clinical and experimental rheumatology 25(4): 654-7	- Study happened outside Europe and had fewer than 100 patients
Singh, Surjit, Agarwal, Sikha, Bhattad, Sagar et al. (2016) Kawasaki disease in infants below 6 months: a clinical conundrum? International journal of rheumatic diseases 19(9): 924-8	- Study happened outside Europe and had fewer than 100 patients
Singh, Surjit, Gupta, Aman, Jindal, Ankur Kumar et al. (2018) Pulmonary presentation of Kawasaki disease-A diagnostic challenge. Pediatric pulmonology 53(1): 103-107	- Study happened outside Europe and had fewer than 100 patients [This study took place in India and it focused on 11 children.]
Song, Dooll, Yeo, Yunku, Ha, KeeSoo et al. (2009) Risk factors for Kawasaki disease-associated coronary abnormalities differ depending on age. European journal of pediatrics 168(11): 1315-21	- No data on the signs and symptoms.
Sudo, Daisuke, Monobe, Yoshiro, Yashiro, Mayumi et al. (2012) Coronary artery lesions of incomplete Kawasaki disease: a nationwide survey in Japan. European journal of pediatrics 171(4): 651-6	- No data on the signs and symptoms.
Sun, L., Tang, Y., Wang, Y. et al. (2018) Changes in profiles of kawasaki disease noted over time in Suzhou, China. Cardiology (Switzerland) 141(1): 69-70	- Duplicate reference
Sundberg, Melissa, Perron, Catherine O., Kimia, Amir et al. (2018) A method to identify pediatric high-risk diagnoses missed in the emergency department. Diagnosis (Berlin, Germany) 5(2): 63-69	- This study is about computer software
Taddio, Andrea, Rossi, Eleonora Dei, Monasta, Lorenzo et al. (2017) Describing Kawasaki shock syndrome: results from a retrospective study and literature review. Clinical rheumatology 36(1): 223-228	- No data on the signs and symptoms.
Takahashi, Takuto, Sakakibara, Hiroshi, Morikawa, Yoshihiko et al. (2015) Development of coronary artery lesions in indolent Kawasaki disease following initial spontaneous defervescence: a retrospective cohort study. Pediatric rheumatology online journal 13(1): 44	- No data on the signs and symptoms.
Thapa, R. and Pal, P. (2010) Transverse orange-brown chromonychia in Kawasaki disease. International Journal of Dermatology 49(2): 227-228	- Study happened outside Europe and had fewer than 100 patients

Study	Code [Reason]
Tomita, Yasuhiko, Shimaya, Maki, Yamaura, Yasuko et al. (2018) Kawasaki disease: Epidemiological differences between past and recent periods, and implications of distribution dynamism. Pediatrics international: official journal of the Japan Pediatric Society 60(4): 349-356	- This is an epidemiological study about incidence rates. Signs and symptoms were beyond the scope of the study.
Tona, Risa, Shinohara, Shogo, Fujiwara, Keizo et al. (2014) Risk factors for retropharyngeal cellulitis in Kawasaki disease. Auris, nasus, larynx 41(5): 455-8	- This is a study about imaging rather than signs and symptoms
Topcu, S., Dogan, O. A., Oz, N. et al. (2014) Clinical evaluations of 49 cases with kawasaki disease: A retrospective cohort study. Cocuk Enfeksiyon Dergisi 8(2): 64-70	- Study happened outside Europe and had fewer than 100 patients
Tseng C-F, Fu Y-C, Fu L-S, et al. Clinical spectrum of Kawasaki disease in infants. Chinese Medical Journal 2001;64(3):168–73.	- Study happened outside Europe and had fewer than 100 patients
Tulloh, Robert M. R., Mayon-White, Richard, Harnden, Anthony et al. (2018) Kawasaki disease: a prospective population survey in the UK and Ireland from 2013 to 2015. Archives of disease in childhood	- No data on the signs and symptoms.
Ulloa-Gutierrez, R., Salgado, A. P., Garrido-Garcia, L. M. et al. (2016) Kawasaki disease (KD) in infants <6 months of age among 20 latin american (LA) countries: a prospective multinational multicenter study of the rekamlatina network. European journal of pediatrics. Conference: 6th congress of the european academy of paediatric societies. Switzerland. Conference start: 20161021. Conference end: 20161025 175(11): 1778	- Conference abstract.
Wilder, Matthew S., Palinkas, Lawrence A., Kao, Annie S. et al. (2007) Delayed diagnosis by physicians contributes to the development of coronary artery aneurysms in children with Kawasaki syndrome. The Pediatric infectious disease journal 26(3): 256-60	- No data on the signs and symptoms.
Yamashita, Maho, Ae, Ryusuke, Yashiro, Mayumi et al. (2017) Difference in Risk Factors for Subtypes of Acute Cardiac Lesions Resulting from Kawasaki Disease. Pediatric cardiology 38(2): 375-380	- No data on the signs and symptoms.
Yamazaki-Nakashimada, Marco Antonio, Deguchi, Kuntaro, Gamez-Gonzalez, Berenise et al. (2019) Orange-brown chromonychia: A valid sign in Kawasaki disease in children of different ethnicities. International journal of rheumatic diseases	- This is a case study.
Yeo, Yunku, Kim, TaeYeon, Ha, KeeSoo et al. (2009) Incomplete Kawasaki disease in patients younger than 1 year of age: a possible inherent risk factor. European journal of pediatrics 168(2): 157-62	- No data on the signs and symptoms.

Appendix J – Research recommendations

Question	Which signs and symptoms (or combinations of signs and symptoms) predict a diagnosis of Kawasaki disease in children under 5 presenting with fever lasting 5 days or more?
Population	Children aged 5 years or under presenting with fever lasting 5 days or longer. Subgroup: Children aged under 1
Index tests	Signs and symptoms of Kawasaki disease including: • bilateral conjunctival injection without exudate • erythema and cracking of lips; strawberry tongue; or erythema of oral and pharyngeal mucosa • oedema and erythema in the hands and feet • polymorphous rash • cervical lymphadenopathy • combinations of the above signs and symptoms
Reference standard	Clinical diagnosis of typical or incomplete Kawasaki disease according to American Heart Association criteria (McCrindle 2017)
Outcomes	Diagnostic accuracy metrics, including sensitivity, specificity and likelihood ratios
Study design	Prognostic cross-sectional diagnostic accuracy study
Importance to patients, service users or the population	It is important to identify children with Kawasaki disease early in the course of their illness to allow timely treatment, which can prevent long term complications. However, Kawasaki disease is relatively uncommon, and so it is also important to consider the harms and costs associated with incorrectly referring children without Kawasaki disease for further assessment. Good quality evidence on the sensitivity and specificity of signs and symptoms is therefore needed.
Relevance to NICE guidance	Medium: the research is relevant to the recommendations in the guidance, but the research recommendations are not essential to future updates.
Current evidence base	There is a lack of good quality evidence on the accuracy of signs and symptoms in predicting a diagnosis of Kawasaki disease, with only 1 very-low quality case-control study identified.
Equality	No specific equality concerns are relevant to this research recommendation.
Feasibility	The study would rely on recording and analysis of signs and symptoms that should be assessed as part of routine clinical care. Therefore, although Kawasaki disease is relatively uncommon and therefore a large number of children would need to be included in the study, it is considered feasible.

Appendix K – Reference list of included studies

Advani, Najib; Santoso, Lucyana Alim; Sastroasmoro, Sudigdo (2019) Profile of Kawasaki Disease in Adolescents: Is It Different? Acta medica Indonesiana 51(1): 42-46

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Behmadi, Maryam; Alizadeh, Behzad; Malek, Abdolreza (2019) Comparison of Clinical Symptoms and Cardiac Lesions in Children with Typical and Atypical Kawasaki Disease. Medical sciences (Basel, Switzerland) 7(4)

Boudiaf, Houda and Achir, Moussa (2016) The Clinical Profile of Kawasaki Disease in Algerian Children: A Single Institution Experience. Journal of tropical pediatrics 62(2): 139-43

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Chen, J. J., Ma, X. J., Liu, F. et al. (2016) Epidemiologic features of Kawasaki disease in Shanghai from 2008 Through 2012. Pediatric Infectious Disease Journal 35(1): 7-12

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Moore, Abigail; Harnden, Anthony; Mayon-White, Richard (2014) Recognising Kawasaki disease in UK primary care: a descriptive study using the Clinical Practice Research Datalink. The British journal of general practice: the journal of the Royal College of General Practitioners 64(625): e477-83

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