

APPENDIX 1

General systematic literature search to create an overview for the task force

Database:	Search string:	Number of studies:
Pubmed	<p>((("asthma"(MeSH Major Topic) NOT ("asthma, aspirin-induced"(MeSH Terms) OR aspirin induced asthma(Title/Abstract) OR NSAID-induced asthma(Title/Abstract) OR aspirin-induced asthma syndrome(Title/Abstract))) OR "rheumatic diseases"(MeSH Major Topic) OR "rheumatic disease"(Title/Abstract) OR "rheumatic diseases"(Title/Abstract) OR "rheumatoid arthritis"(Title/Abstract) OR "arthritis, rheumatoid"(MeSH Major Topic) OR "polymyalgia rheumatica"(MeSH Terms) OR "lupus erythematosus, systemic"(MeSH Terms) OR "polymyositis"(MeSH Terms) OR "dermatomyositis"(MeSH Terms) OR "giant cell arteritis"(MeSH Terms) OR "takayasu arteritis"(MeSH Terms) OR "polyarteritis nodosa"(MeSH Terms) OR "wegener granulomatosis"(MeSH Terms) OR "microscopic polyangiitis"(MeSH Terms) OR "churg-strauss syndrome"(MeSH Terms) OR "behcet syndrome"(MeSH Terms) OR "sarcoidosis"(MeSH Major Topic) OR "polychondritis, relapsing"(MeSH Terms) OR "shock, septic"(MeSH Terms) OR "inflammatory bowel diseases"(MeSH Major Topic) OR "inflammatory bowel disease"(Title/Abstract) OR "inflammatory bowel diseases"(Title/Abstract) OR "pulmonary disease, chronic obstructive"(MeSH Major Topic) OR "chronic obstructive pulmonary disease"(Title/Abstract) OR COPD(Title/Abstract) OR "scleroderma, systemic"(MeSH Terms))</p> <p>AND</p> <p>(("Glucocorticoids/therapeutic use"(Mesh) OR glucocorticoids(MeSH Terms) OR prednisolone(MeSH Terms) OR prednisone(MeSH Terms) OR predniso*(Title/Abstract) OR dexamethasone(MeSH Terms) OR methylprednisolone(MeSH Terms) OR budesonide(MeSH Terms) OR triamcinolone(MeSH Terms) OR deflazacort(Title/Abstract) OR hydrocortisone(MeSH Terms) OR cortisone(MeSH Terms) OR solumedrol(Title/Abstract) OR "solu medrol"(Title/Abstract) OR depomedrol(Title/Abstract) OR "depo medrol"(Title/Abstract))</p> <p>AND</p> <p>("7.5 mg"(Title/Abstract) OR "7,5 mg"(Title/Abstract) OR "10 mg"(Title/Abstract) OR "15 mg"(Title/Abstract) OR "20 mg"(Title/Abstract) OR "25 mg"(Title/Abstract) OR "30 mg"(Title/Abstract) OR "40 mg"(Title/Abstract) OR "60 mg"(Title/Abstract) OR "80 mg"(Title/Abstract) OR "100 mg"(Title/Abstract) OR "120 mg"(Title/Abstract) OR "200 mg"(Title/Abstract) OR "1000 mg"(Title/Abstract) OR "high dose"(Title/Abstract) OR "high dose glucocorticoid"(Title/Abstract) OR "high dose glucocorticoids"(Title/Abstract) OR "medium dose"(Title/Abstract) OR "high dosages"(Title/Abstract) OR "moderate dose"(Title/Abstract) OR "medium dosages"(Title/Abstract) OR "moderate dosages"(Title/Abstract))</p> <p>AND</p> <p>((Oral(Title/Abstract) OR intramuscular(Title/Abstract) OR intravenous(Title/Abstract) OR "pulse treatment"(Title/Abstract) OR "pulse therapy"(Title/Abstract)) NOT (topical(Title/Abstract) OR transdermal(Title/Abstract) OR nasal(Title/Abstract) OR intranasal(Title/Abstract) OR rectal(Title/Abstract)))</p> <p>AND</p> <p>("adverse effect"(Title/Abstract) OR "adverse effects"(Title/Abstract) OR "adverse event"(Title/Abstract) OR "adverse events"(Title/Abstract) OR "side effect"(Title/Abstract) OR "side effects"(Title/Abstract) OR</p>	461

	<p>"side-effect"(Title/Abstract) OR "side-effects"(Title/Abstract) OR "unwanted effect"(Title/Abstract) OR "unwanted effects"(Title/Abstract) OR "osteoporosis"(MeSH Terms) OR "osteonecrosis"(MeSH Terms) OR "muscle weakness"(MeSH Terms) OR "glucose intolerance"(MeSH Terms) OR "diabetes mellitus"(MeSH Terms) OR "weight gain"(MeSH Terms) OR "hyperglycemia"(MeSH Terms) OR "menstruation disturbances"(MeSH Terms) OR "dyslipidemias"(MeSH Terms) OR "atherosclerosis"(MeSH Terms) OR "hypertension"(MeSH Terms) OR "edema"(MeSH Terms) OR "heart failure"(MeSH Terms) OR "water-electrolyte imbalance"(MeSH Terms) OR "myocardial infarction"(MeSH Terms) OR "coronary artery disease"(MeSH Terms) OR "tachycardia, sinus"(MeSH Terms) OR "hypokalemia"(MeSH Terms) OR "hypocalcemia"(MeSH Terms) OR "hirsutism"(MeSH Terms) OR "alopecia"(MeSH Terms) OR "hypertrichosis"(MeSH Terms) OR "cushing syndrome"(MeSH Terms) OR "purpura"(MeSH Terms) OR "cataract"(MeSH Terms) OR "glaucoma"(MeSH Terms) OR "peptic ulcer"(MeSH Terms) OR "pancreatitis"(MeSH Terms) OR "candidiasis"(MeSH Terms) OR "depression"(MeSH Terms) OR "anxiety"(MeSH Terms) OR "irritable mood"(MeSH Terms) OR "dizziness"(MeSH Terms) OR "tinnitus"(MeSH Terms) OR "carcinoma"(MeSH Terms) OR "thrombocytopenia"(MeSH Terms) OR "leukopenia"(MeSH Terms) OR "leukocytosis"(MeSH Terms) OR "proteinuria"(MeSH Terms) OR "arrhythmias, cardiac"(MeSH Terms) OR "hyponatremia"(MeSH Terms) OR "bone loss"(Title/Abstract) OR "Vertebral deformity"(Title/Abstract) OR "Vertebral deformities"(Title/Abstract) OR "fracture"(Title/Abstract) OR "fractures"(Title/Abstract) OR "bone mineral density"(Title/Abstract) OR "bone density"(Title/Abstract) OR myopathy(Title/Abstract) OR "blood glucose"(Title/Abstract) OR "fasting glucose"(Title/Abstract) OR "urine glucose"(Title/Abstract) OR "glycosuria"(Title/Abstract) OR "adipositas"(Title/Abstract) OR "buffalo hump"(Title/Abstract) OR "hyperlipidemia"(Title/Abstract) OR hyperlipidaemia(Title/Abstract) OR hypercholesterolaemia(Title/Abstract) OR "angina pectoris"(Title/Abstract) OR "blood pressure"(Title/Abstract) OR oedema(Title/Abstract) OR "cardiac insufficiency"(Title/Abstract) OR "fluid retention"(Title/Abstract) OR "facial fullness"(Title/Abstract) OR "facial swelling"(Title/Abstract) OR "moon face"(Title/Abstract) OR "cutaneous atrophy"(Title/Abstract) OR "skin atrophy"(Title/Abstract) OR "skin hemorrhage"(Title/Abstract) OR "skin bleeding"(Title/Abstract) OR striae(Title/Abstract) OR "easy bruisability"(Title/Abstract) OR "easy bruising"(Title/Abstract) OR "wound healing"(Title/Abstract) OR "hair loss"(Title/Abstract) OR "gastric ulcer"(Title/Abstract) OR "gastroduodenal ulcer"(Title/Abstract) OR dyspepsia(Title/Abstract) OR dysphagia(Title/Abstract) OR "gastric hemorrhage"(Title/Abstract) OR "stomach hemorrhage"(Title/Abstract) OR "gastroduodenal hemorrhage"(Title/Abstract) OR "viral infection"(Title/Abstract) OR "fungal infection"(Title/Abstract) OR "bacterial infection"(Title/Abstract) OR "skin infection"(Title/Abstract) OR "urinary infection"(Title/Abstract) OR "respiratory infection"(Title/Abstract) OR infection(Title/Abstract) OR libido(Title/Abstract) OR infertility(Title/Abstract) OR palpitation(Title/Abstract) OR psychosis(Title/Abstract) OR euphoria(Title/Abstract) OR seizures(Title/Abstract) OR tremor(Title/Abstract) OR "mood disturbance"(Title/Abstract) OR "mood lability"(Title/Abstract)</p>	
Embase	<p>(('asthma'/exp NOT ('asthma, aspirin-induced'/exp OR 'aspirin induced asthma'/exp OR 'nsaid-induced asthma'/exp OR 'aspirin-induced asthma'/exp) OR 'rheumatic disease'/exp OR 'rheumatic diseases'/exp OR 'rheumatoid arthritis'/exp OR 'arthritis, rheumatoid'/exp OR 'polymyalgia rheumatica'/exp OR 'lupus erythematosus, systemic'/exp</p>	427

OR 'polymyositis'/exp OR 'dermatomyositis'/exp OR 'giant cell arteritis'/exp OR 'takayasu arteritis'/exp OR 'polyarteritis nodosa'/exp OR 'wegener granulomatosis'/exp OR 'microscopic polyangiitis'/exp OR 'churg-strauss syndrome'/exp OR 'behcet syndrome'/exp OR 'sarcoidosis'/exp OR 'polychondritis, relapsing'/exp OR 'shock, septic'/exp OR 'inflammatory bowel disease'/exp OR 'inflammatory bowel diseases'/exp OR 'pulmonary disease, chronic obstructive'/exp OR 'chronic obstructive pulmonary disease'/exp OR 'copd'/exp OR 'scleroderma, systemic'/exp) AND ((article)/lim OR (article in press)/lim OR (conference abstract)/lim OR (conference paper)/lim OR (conference review)/lim OR (review)/lim OR (short survey)/lim) AND ((adult)/lim OR (aged)/lim) AND (humans)/lim) AND

AND

(('glucocorticoids'/exp OR 'glucocorticoid'/exp OR 'prednisolone'/exp OR 'prednisone'/exp OR predniso* OR 'dexamethasone'/exp OR 'methylprednisolone'/exp OR 'budesonide'/exp OR 'triamcinolone'/exp OR 'deflazacort'/exp OR 'hydrocortisone'/exp OR 'cortisone'/exp OR 'solumedrol'/exp OR 'solu medrol'/exp OR 'depomedrol'/exp OR 'depo medrol'/exp) AND ('7.5 mg' OR '10 mg' OR '15 mg' OR '20 mg' OR '25 mg' OR '30 mg' OR '40 mg' OR '60 mg' OR '80 mg' OR '100 mg' OR '120 mg' OR '200 mg' OR '1000 mg' OR 'high dose'/exp OR 'drug megadose'/exp) AND (('oral'/exp OR 'intravenous'/exp OR 'drug pulse therapy'/exp OR 'short course therapy'/exp OR 'intramuscular'/exp) NOT ('rectal'/exp OR 'transdermal'/exp OR 'topical'/exp OR 'intranasal drug administration'/exp)) AND ((article)/lim OR (article in press)/lim OR (conference abstract)/lim OR (conference paper)/lim OR (conference review)/lim OR (review)/lim OR (short survey)/lim) AND ((adult)/lim OR (aged)/lim) AND (humans)/lim) AND

AND

'adverse effect'/exp OR 'side effect'/exp OR 'side-effect'/exp OR 'osteoporosis'/exp OR 'osteonecrosis'/exp OR 'muscle weakness'/exp OR 'glucose intolerance'/exp OR 'diabetes mellitus'/exp OR 'weight gain'/exp OR 'hyperglycemia'/exp OR 'menstruation disturbances'/exp OR 'dyslipidemias'/exp OR 'atherosclerosis'/exp OR 'hypertension'/exp OR 'edema'/exp OR 'heart failure'/exp OR 'water-electrolyte imbalance'/exp OR 'myocardial infarction'/exp OR 'coronary artery disease'/exp OR 'tachycardia, sinus'/exp OR 'hypokalemia'/exp OR 'hypocalcemia'/exp OR 'hirsutism'/exp OR 'alopecia'/exp OR 'hypertrichosis'/exp OR 'cushing syndrome'/exp OR 'purpura'/exp OR 'cataract'/exp OR 'glaucoma'/exp OR 'peptic ulcer'/exp OR 'pancreatitis'/exp OR 'candidiasis'/exp OR 'depression'/exp OR 'anxiety'/exp OR 'irritable mood'/exp OR 'dizziness'/exp OR 'tinnitus'/exp OR 'carcinoma'/exp OR 'thrombocytopenia'/exp OR 'leukopenia'/exp OR 'leukocytosis'/exp OR 'proteinuria'/exp OR 'arrhythmias, cardiac'/exp OR 'hypernatremia'/exp OR 'bone loss'/exp OR 'vertebral deformity'/exp OR 'fracture'/exp OR 'fractures'/exp OR 'bone mineral density'/exp OR 'bone density'/exp OR 'myopathy'/exp OR 'blood glucose'/exp OR 'urine glucose'/exp OR 'glycosuria'/exp OR 'adipositas'/exp OR 'hyperlipidemia'/exp OR 'hyperlipidaemia'/exp OR 'hypercholesterolaemia'/exp OR 'angina pectoris'/exp OR 'blood pressure'/exp OR 'oedema'/exp OR 'cardiac insufficiency'/exp OR 'fluid retention'/exp OR 'face edema'/exp OR 'moon face'/exp OR 'cutaneous atrophy'/exp OR 'skin atrophy'/exp OR 'skin hemorrhage'/exp OR 'skin bleeding'/exp OR 'striae'/exp OR 'easy bruisability'/exp OR 'restlessness'/exp OR 'wound healing'/exp OR 'hair loss'/exp OR 'gastric ulcer'/exp OR 'gastroduodenal ulcer'/exp OR 'dyspepsia'/exp OR 'dysphagia'/exp OR 'gastric hemorrhage'/exp OR 'stomach hemorrhage'/exp OR 'gastroduodenal hemorrhage'/exp OR 'viral infection'/exp OR 'fungal infection'/exp OR 'bacterial infection'/exp OR 'skin infection'/exp OR 'urinary infection'/exp OR 'respiratory

	infection'/exp OR 'infection'/exp OR 'libido'/exp OR 'infertility'/exp OR 'palpitation'/exp OR 'psychosis'/exp OR 'euphoria'/exp OR 'seizures'/exp OR 'tremor'/exp OR 'mood disturbance'/exp OR 'mood lability'/exp) AND ((article)/lim OR (article in press)/lim OR (conference abstract)/lim OR (conference paper)/lim OR (conference review)/lim OR (review)/lim OR (short survey)/lim) AND ((adult)/lim OR (aged)/lim) AND (humans)/lim	
Cochrane	<p>asthma NOT ("asthma, aspirin-induced" OR "aspirin induced asthma" OR "NSAID-induced asthma" OR "aspirin-induced asthma syndrome") OR "rheumatic diseases" OR "rheumatic disease" OR "rheumatic diseases" OR "rheumatoid arthritis" OR "arthritis, rheumatoid" OR "polymyalgia rheumatica" OR "lupus erythematosus, systemic" OR polymyositis OR dermatomyositis OR "giant cell arteritis" OR "takayasu arteritis" OR "polyarteritis nodosa" OR "wegener granulomatosis" OR "microscopic polyangiitis" OR "churg-strauss syndrome" OR "behcet syndrome" OR sarcoidosis OR "polychondritis, relapsing" OR "shock, septic" OR "inflammatory bowel diseases" OR "inflammatory bowel disease" OR "inflammatory bowel diseases" OR "pulmonary disease, chronic obstructive" OR "chronic obstructive pulmonary disease" OR COPD OR "scleroderma, systemic"</p> <p>AND</p> <p>glucocorticoids OR prednisolone OR prednisone OR predniso* OR dexamethasone OR methylprednisolone OR budesonide OR triamcinolone OR deflazacort OR hydrocortisone OR cortisone OR solumedrol OR "solu medrol" OR depomedrol OR "depo medrol":ti,ab,kw</p> <p>AND</p> <p>"7,5 mg" OR "7.5 mg" OR "10 mg" OR "15 mg" OR "20 mg" OR "25 mg" OR "30 mg" OR "40 mg" OR "60 mg" OR "80 mg" OR "100 mg" OR "120 mg" OR "200 mg" OR "1000 mg" OR "high dose" OR "high dose glucocorticoid" OR "high dose glucocorticoids" OR "medium dose" OR "high dosages" OR "moderate dose" OR "medium dosages" OR "moderate dosages":ti,ab,kw</p> <p>AND</p> <p>oral OR intravenous OR "pulse treatment" OR "pulse therapy" OR intramuscular):ti,ab,kw NOT (topical OR transdermal OR nasal OR intranasal OR rectal):ti,ab,kw</p> <p>AND</p> <p>("adverse effect" OR "adverse effects" OR "adverse event" OR "adverse events" OR "side effect" OR "side effects" OR "side-effect" OR "side-effects" OR "unwanted effect" OR "unwanted effects" OR osteoporosis OR osteonecrosis OR "muscle weakness" OR "glucose intolerance" OR "diabetes mellitus" OR "weight gain" OR hyperglycemia OR "menstruation disturbances" OR dyslipidemias OR atherosclerosis OR hypertension OR edema OR "heart failure" OR "water-electrolyte imbalance" OR "myocardial infarction" OR "coronary artery disease" OR "tachycardia, sinus" OR hypokalemia OR hypocalcemia OR hirsutism OR alopecia OR hypertrichosis OR "cushing syndrome" OR "purpura" OR "cataract" OR "glaucoma" OR "peptic ulcer" OR pancreatitis OR candidiasis OR depression OR anxiety OR "irritable mood" OR dizziness OR tinnitus OR carcinoma OR thrombocytopenia OR leukopenia OR leukocytosis OR proteinuria OR "arrhythmias, cardiac" OR hypernatremia OR hypernatraemia OR "bone loss" OR "Vertebral deformity" OR "Vertebral deformities" OR "fracture" OR "fractures" OR "bone mineral density" OR "bone density" OR myopathy OR "blood glucose" OR "fasting glucose" OR "urine glucose" OR glycosuria OR adipositas OR "buffalo hump" OR hyperlipidemia OR hyperlipidaemia OR hypercholesterolaemia OR "angina pectoris" OR "blood pressure" OR oedema OR "cardiac insufficiency" OR "fluid retention" OR "facial fullness" OR "facial</p>	216

	swelling" OR "moon face" OR "cutaneous atrophy" OR "skin atrophy" OR "skin hemorrhage" OR "skin bleeding" OR striae OR "easy bruisability" OR "easy bruising" OR "wound healing" OR "hair loss" OR "gastric ulcer" OR "gastroduodenal ulcer" OR dyspepsia OR dysphagia OR "gastric hemorrhage" OR "stomach hemorrhage" OR "gastroduodenal hemorrhage" OR "viral infection" OR "fungal infection" OR "bacterial infection" OR "skin infection" OR "urinary infection" OR "respiratory infection" OR infection OR libido OR infertility OR palpitation OR psychosis OR euphoria OR seizures OR tremor OR "mood disturbance" OR "mood lability"):ti,ab,kw	
<i>Total number of studies (excluding duplicates):</i>		916

Inclusion criteria:

- Patients with rheumatic disease, inflammatory bowel disease, inflammatory respiratory disease, or septic shock
- Prospective study including treatment with systemic medium to high dose GC therapy (i.e. medium dose, high dose, pulse therapy, intramuscular therapy or step down scheme) and information on GC dose and duration of treatment provided (to calculate cumulative dosages and mean daily dosages)
- Reporting of at least one GC-related adverse effect

Exclusion criteria:

- Animal studies
- Studies in children (<18 years)
- Retrospective studies
- Language other than English, German or Dutch
- Topical, inhalation or intra-articular GC use
- Insufficient data given to calculate the cumulative GC dose during the study period
- Case series or case reports
- Letters, editorials
- Congress abstracts
- Reviews