**Supplementary Appendix 1: pediatric Regional Examination of the Musculoskeletal System (pREMS)**

**General Principles**

***Introduction***

* Introduction of assessor to child and parent / carer
* Explanation of what to be examined, Gain verbal consent to examine
* Be aware of normal variants in leg alignment, joint range, gait, developmental milestones

***Look for:***

* Swellings, Rashes , Muscle wasting , Scars
* Deformity / Dysmorphism / Discomfort (nonverbal) / “Disproportions”

***Feel for:***

* Temperature, Swelling, Tenderness

***Move***

* Full range of movement – active and passive
* Restriction – mild, moderate or severe

***Function and measure***

* Functional assessment of joint / anatomic region to include power of muscles and stability
* Measurement of height / leg length

***Additional Options pending clinical scenario***

**Examination schedules by anatomical region** (note - the components underlined are those additional to adult REMS and the components *in italics* are those deemed to be appropriate for the specialist trainee in pediatric rheumatology to be aware of but not necessarily competent)

**Examination of the hand and wrist**

* Look at the hands (palms and backs) for muscle wasting, joint swelling, skin and nail changes
* Feel for radial pulse, tendon thickening and bulk of thenar and hypothenar eminences
* Feel for skin temperature
* Squeeze metacarpophalangeal joints (MCPJs)
* Bimanually feel /palpate small joints of the hands including wrists and especially if there are swollen or painful joints or restricted movement noted)
* Look and feel along ulnar border
* Assess full finger extension and full finger tuck
* Assess wrist flexion and extension, abduction and adduction – active and passive
* Assess function: grip and pinch, picking up small object, writing / drawing
* Option – hypermobility syndromes, muscle power, capillaroscopy, peripheral nerves

**Examination of the elbow**

* Look for carrying angle, scars, swellings or rashes, deformity
* Feel for skin temperature
* Feel over head of radius, joint line, medial and lateral epicondyles
* Assess full flexion and extension, pronation and supination – actively and passively
* Assess function – e.g. hand to nose or mouth, hands behind head
* Option – hypermobility syndromes, muscle power, entheses, *instability tests*

**Examination of the shoulder**

**With the patient standing or sitting:**

* Look at the shoulders , clavicles and sternoclavicular joints from the front, side and behind and assess shoulder height
* Look at the skin in axillae and palpate for lymphadenopathy
* Assess skin temperature
* Feel bony landmarks and surrounding muscles
* Assess movement and function: hands behind head, hands behind back
* Assess (actively and passively) external rotation, flexion, extension and abduction
* Observe scapular movement
* Options – hypermobility syndromes, muscle power, *instability*

**Examination of the hip**

**With the patient supine lying on couch:**

* Look for flexion deformity and leg length disparity
* Check for scars, rashes
* Feel the greater trochanter for tenderness
* Assess full hip flexion, internal and external rotation, abduction and adduction
* Perform Thomas’ test
* Hip abduction (lying on side)

**Patient lying prone on couch**

* SIJ palpation
* Hip internal (and external) rotation

***With the patient standing:***

* Assess posture and leg alignment
* Look for gluteal muscle bulk
* Perform the Trendelenburg test
* Assess function (gait with turning and running, ancillary movements)
* Options – hypermobility, muscle power, entheses, *thigh foot angle (child with intoeing)*

**Examination of the knee**

**With the patient standing:**

* Look for varus/valgus deformity, hyperextension and popliteal swellings
* Look at the skin for pattern of bruising and rashes
* Assess gait (see hip)

**With the patient lying on couch:**

* Look from the end of the couch for varus/valgus deformity, muscle wasting, scars and swellings
* Look from the side for fixed flexion deformity
* Check for passive hyperextension and leg length discrepancy
* Feel skin temperature
* With the knee slightly flexed feel/palpate the joint line and the borders of the patella
* Feel the popliteal fossa
* Perform a patellar tap and cross fluctuation (bulge sign)
* Assess full flexion and extension (actively and passively)
* Option - Assess stability of knee ligaments – medial and lateral collateral – and perform anterior draw test
* Option – tests for ant knee pain / patellar maltracking / apprehension / *patella* *glide*
* Option – hypermobility, muscle power, entheses, hamstring tightness, iliotibial band tightness, *thigh-foot angle*

***Examination of the foot and ankle***

***With the patient lying supine on couch:***

* Look at dorsal and plantar surfaces of the foot
* Feel the skin temperature
* Feel/palpate for peripheral pulses
* Squeeze the MTPJs
* Feel/palpate the mid-foot, ankle joint line and subtalar joint
* Assess movement (actively and passively) at the subtalar joint (inversion and eversion), the big toe (dorsi- and plantar flexion), the ankle joint (dorsi- and plantar flexion) and mid-tarsal joints (passive rotation)
* Look at the patient’s footwear
* Option – hypermobility, muscle power, entheses, capillaroscopy, *thigh foot angle*

***With the patient standing:***

* Look at the forefoot, mid-foot (foot arch) and the hindfoot
* Assess gait cycle (heel strike, stance, toe off), running and turning
* Assess muscle bulk (calves)

***Examination of the spine***

***With the patient standing:***

* Look at the spine from the side and from behind
* Look at the skin and natal cleft
* Look at limb and trunk proportions
* Look at the face and jaw profile
* Feel the spinal processes and paraspinal muscles and Temporomandibular joints (TMJs)
* Assess movement: lumbar flexion and extension and lateral flexion; cervical flexion, extension, rotation and lateral flexion, thoracic rotation
* Assess TMJ opening
* Options – Schober’s test, “stork test”

***With the patient sitting on couch (standing in younger child):***

* Assess thoracic rotation

***With the patient lying on couch:***

* Perform straight leg raising and dorsi-flexion of the big toe
* Assess limb reflexes
* Option – leg length, hypermobility, sacroiliac joint palpation (Faber’s / Patrick’s test)