### Table 1: Descriptions of ERM

| Category | Sub-categories | Examples: |
|----------|----------------|-----------|
| **Activity-focused** | Activity – mobilising, positioning, stretching | “ERM provided includes - passive movements of limbs, periodic change of position, use of splints on extremities and if stable in the long term patients - sitting up in tumble form chair and mobilising out of bed.” (Doctor, 67) |
| | | “We aim to get the children sitting upright, either over the edge of the bed or inappropriate seating as soon as possible.” (Occupational Therapist, 001) |
| | | “Nursing staff are taught the importance of regular position changes for patient ... and positioning to maintain ranges of movement and prevent foot drop.” (Nurse, 017) |
| **Core health care professional involvement** – physiotherapist, nurse, occupational therapist | “We try and mobilise patients as soon as able when not invasively ventilated - physio led.” (Doctor, 058) |
| | “As physiotherapists, we work with the occupational therapist and nursing staff to either re-position, sit up in bed, sit on the edge of the bed or stand whilst on the ventilators.” (Physiotherapist, 069) |
| **Additional health care professional involvement** – psychology, dietician, play therapist, speech and language therapists | “Speech and language therapy become involved usually when nursing or medical staff identify a need for referral.” (Doctor, 003) |
| | “We have a Play Specialist on PICU, who assists with communication tools/toys.” (Nurse, 082) |
| **Seating and equipment** | “Specialist seating need – linking in with OT to ensure appropriate seating available.” (Physiotherapist, 019) |
We have also in the past asked adult [services] to use their moto-med bike and used this with teenagers, but this can be a challenge as it is very far from PICU and it is often in use.” (Physiotherapist, 014)

| Sedation management | “Working with the medics to wean sedation as quickly as possible. This promotes faster ability to mobilise and progress in their rehabilitation.” (Nurse, 034) |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ‘Routine care’ vs ‘purposeful ERM package’ | Some centres define ERM as passive range of movement, repositioning or providing splints. We would deem this as essential core cares rather than ERM; the large majority of our patients will have positioning and movement plan from day 1 of admission." (Physiotherapist, 111 ) |

**Tailored**

Following the assessment of needs and patient and family preference, ERM activities are personalised to the individual patient.

| Assessment of need | “We have a programme where patients are categorised to one of 3 levels. Each level provides nursing and therapy staff with activities aligned to the acuity of the patient.” (Nurse, 040) |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Individual preference | “Parents will tell us what their child enjoys doing and make suggestions, often provide toys/games from home.” (Nurse, 076) |
| | “Discuss with parents what patient enjoys doing, watching etc. Discuss options regarding taking patients ‘out’ where possible if long term patients.” (Nurse, 015) |

**Promote recovery**

The purpose of ERM is to normalise the PICU environment, to create an environment that addresses holistic needs, sustains or promotes development and supports recovery from critical illness.

| Normalising PICU environment | “Provide activities they would use for their enjoyment. This enables them to be more relaxed and less aware of what is going on with / around them.” (Play specialist, 102) |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | “Being in PICU can be a frightening experience. Not only is a child/young person away from home, but also away from their usual environment, family and friends. There are unfamiliar sounds, smells, equipment and people. The play specialist can help to make the stay more enjoyable and children/young people to cope and understand.” (Play specialist, 055) |
| Sustain / promote child development | “Encouraging the patient to regain or further their development in a therapeutic fun manner.” (Play therapist,102) |
| Restoration / recovery | “Interventions aim to promote physical recovery – movement, and ability to engage in activities and psychological recovery – orientation, speech, ability to play and attend school.” (Nurse, 021) |
|------------------------|--------------------------------------------------------------------------------------------------|
| **Timing of ERM**      | **‘Early’ poorly defined**<br>“I like to think we consider it within 2-3 days we have a better idea of the patients PICU journey and how long they are going to stay. The reality is it’s usually longer... usually week 2 of admission if they are still on the unit.” (Physiotherapist, 090) |
|                        | “There is no formal plan for who decides if a patient should start ERM and when... Currently the delivery of ERM is fairly ad hoc, based on what is highlighted from daily handover each morning.” (Physiotherapist, 083) |
|                        | “We provide ERM as a structured programme... every patient after 24 hours of admission is considered for ERM.” (Doctor, 012) |
|                        | **Patient stability, risk and benefit**<br>“Members of the PICU team with less experience of early rehab can deem ERM ‘unsafe’ which can occasionally act as a barrier.”(Physiotherapist, 016) |
|                        | “Usually ERM activity is not considered until patients can physiologically tolerate movement and are stable with observations.” (Nurse, 008) |
|                        | **‘Long-stay’**<br>“ERM is often thought about as a patient comes up to extubation or has failed extubation, and we feel that the reason for failure may be because of critical care weakness.” (Physiotherapist, 031) |
|                        | “We provide very little ERM on PICU, other than for long term patients, which is often, in my opinion, delayed.” (Nurse, 007) |
Table 2: Reported frequency of receiving or being involved in Early Rehabilitation and Mobilisation by age groups, length of PICU stay, diagnostic category, and health care professional or parental/family role (n=124 respondents)*

| By age group                     | Always (n, %) | Very often (n, %) | Sometimes (n, %) | Seldom (n, %) | Never (n, %) | Don’t know (n, %) | Not Applicable * |
|----------------------------------|---------------|------------------|-----------------|--------------|-------------|------------------|-----------------|
| All PICU Patients (any age)      | 6 (5)         | 45 (36)          | 48 (39)         | 14 (11)      | 0 (0)       | 11 (9)           | 0               |
| >10-18 years old                 | 18 (15)       | 40 (32)          | 43 (35)         | 8 (6)        | 1 (1)       | 14 (11)          | 0               |
| >4-10 years old                  | 16 (13)       | 42 (34)          | 41 (33)         | 10 (8)       | 1 (1)       | 14 (11)          | 0               |
| 1-4 years old                    | 13 (10)       | 42 (34)          | 39 (31)         | 13 (10)      | 1 (1)       | 16 (13)          | 0               |
| Infants & <1 year old            | 6 (5)         | 47 (38)          | 32 (26)         | 20 (16)      | 3 (2)       | 16 (13)          | 0               |

| By length of stay in PICU        |               |                  |                 |              |             |                  |                 |
|----------------------------------|---------------|-----------------|-----------------|--------------|-------------|------------------|-----------------|
| PICU >28 days                    | 43 (35)       | 48 (39)         | 14 (11)         | 4 (3)        | 0 (0)       | 15 (12)          | 0               |
| PICU >7-28 days                  | 27 (22)       | 46 (37)         | 26 (21)         | 8 (6)        | 0 (0)       | 17 (14)          | 0               |
| PICU 3-7 days                    | 12 (10)       | 32 (26)         | 40 (32)         | 19 (15)      | 5 (4)       | 16 (13)          | 0               |
| PICU <3 days                     | 3 (2)         | 14 (11)         | 39 (31)         | 33 (27)      | 17 (14)     | 18 (15)          | 0               |

| By diagnostic category           |               |                  |                 |              |             |                  |                 |
|----------------------------------|---------------|-----------------|-----------------|--------------|-------------|------------------|-----------------|
| Acquired brain injury            | 36 (29)       | 39 (31)         | 16 (13)         | 11 (9)       | 4 (3)       | 18 (15)          | 0               |
| Severe developmental delay       | 11 (9)        | 43 (35)         | 39 (31)         | 12 (10)      | 3 (2)       | 16 (13)          | 0               |
| Cancer                           | 11 (9)        | 24 (19)         | 36 (29)         | 14 (11)      | 4 (3)       | 35 (28)          | 0               |
| Pre-existing physical morbidity  | 9 (7)         | 38 (31)         | 44 (35)         | 12 (10)      | 4 (3)       | 17 (14)          | 0               |
| Mechanically ventilated          | 9 (7)         | 38 (31)         | 39 (31)         | 18 (15)      | 5 (4)       | 15 (12)          | 0               |
| Congenital heart disease         | 9 (7)         | 24 (19)         | 39 (31)         | 15 (12)      | 6 (5)       | 31 (25)          | 0               |
| Respiratory illness              | 7 (6)         | 35 (28)         | 39 (31)         | 22 (18)      | 3 (2)       | 18 (15)          | 0               |
| Sepsis                           | 7 (6)         | 28 (23)         | 44 (35)         | 20 (16)      | 5 (4)       | 20 (16)          | 0               |
| Multi-organ failure              | 5 (4)         | 14 (11)         | 32 (26)         | 35 (28)      | 12 (10)     | 26 (21)          | 0               |
| Mechanically supported (e.g. extracorporeal life support) | 4 (3) | 8 (6) | 14 (11) | 13 (10) | 47 (38) | 38 (31) | 0 |

| Health Care Professional team members & parent or family member(s) involvement in ERM (when applicable)* | | | | | | |
|----------------------------------|---------------|-----------------|-----------------|--------------|-------------|------------------|-----------------|
| Physiotherapist                  | 86 (70)       | 27 (22)         | 4 (3)           | 2 (2)        | 0 (0)       | 4 (3)            | 1               |

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|                          |        |        |        |        |        |        |        |
|--------------------------|--------|--------|--------|--------|--------|--------|--------|
| Nurse                    | 54 (44)| 49 (40)| 9 (7)  | 5 (4)  | 0 (0)  | 6 (5)  | 1      |
| Parent or family member  | 36 (29)| 56 (46)| 19 (15)| 7 (6)  | 1 (1)  | 4 (3)  | 1      |
| Occupational therapist   | 23 (19)| 34 (29)| 29 (24)| 20 (17)| 6 (5)  | 7 (6)  | 5      |
| Doctor                   | 22 (18)| 20 (16)| 26 (21)| 30 (24)| 13 (11)| 12 (10)| 1      |
| Play therapist           | 12 (10)| 24 (21)| 39 (34)| 26 (23)| 9 (8)  | 5 (4)  | 9      |
| Dietician                | 10 (8) | 20 (17)| 12 (10)| 29 (24)| 37 (31)| 13 (11)| 3      |
| Speech and Language therapist | 4 (3) | 11 (9) | 40 (33)| 35 (29)| 20 (17)| 10 (8) | 4      |
| Psychologist             | 3 (3)  | 11 (10)| 24 (23)| 32 (30)| 30 (28)| 6 (6)  | 18     |

* Percentages may not total 100 due to rounding

* Not applicable (e.g. not available in PICU) responses excluded from percent calculation.
Table 3: Barriers of ERM delivery within Paediatric Intensive Care Units (n=124 respondents)*

| Institutional barriers                                    | Strongly Agree n (%) | Agree n (%) | Neutral n (%) | Disagree n (%) | Strongly Disagree n (%) | Skipped responses^ (n) |
|-----------------------------------------------------------|----------------------|-------------|---------------|-----------------|-------------------------|------------------------|
| Insufficient equipment/resources                          | 31 (26)              | 52 (43)     | 22 (18)       | 13 (11)         | 3 (2)                   | 3                      |
| Lack of written guidelines/protocol                      | 31 (26)              | 38 (31)     | 35 (29)       | 11 (9)          | 6 (5)                   | 3                      |
| Inadequate funding                                       | 30 (25)              | 43 (36)     | 28 (23)       | 16 (13)         | 4 (3)                   | 3                      |
| Absence of champion/advocate to promote ERM             | 25 (21)              | 43 (36)     | 23 (19)       | 21 (17)         | 9 (7)                   | 3                      |
| Absence of frequent ERM patient screening                | 25 (23)              | 38 (35)     | 24 (22)       | 14 (13)         | 8 (7)                   | 14                     |
| Lack of physical space                                  | 17 (14)              | 51 (42)     | 17 (14)       | 32 (26)         | 4 (3)                   | 3                      |
| Instructions that patients should not move in their bed  | 10 (8)               | 25 (21)     | 24 (20)       | 48 (40)         | 14 (12)                 | 3                      |
| Consultant’s permission or prescription is required prior to mobilisation | 5 (4)               | 39 (32)     | 32 (26)       | 33 (27)         | 12 (10)                 | 3                      |
| Provider barriers                                        |                      |             |               |                 |                         |                        |
| Slow recognition of patient readiness for ERM           | 19 (16)              | 46 (38)     | 19 (16)       | 35 (29)         | 2 (2)                   | 3                      |
| Limited staffing to deliver ERM                          | 42 (35)              | 54 (45)     | 11 (9)        | 13 (11)         | 1 (1)                   | 3                      |
| Lack of prioritisation of ERM within patient care plans | 27 (22)              | 45 (37)     | 22 (18)       | 24 (20)         | 3 (2)                   | 3                      |
| Inadequate training                                     | 20 (17)              | 54 (45)     | 18 (15)       | 26 (21)         | 3 (2)                   | 3                      |
| Conflicting perceptions concerning patient suitability   | 17 (14)              | 59 (49)     | 22 (18)       | 21 (17)         | 2 (2)                   | 3                      |
| Lack of specific decision-making authority for ERM initiation | 16 (13)             | 49 (40)     | 28 (23)       | 24 (20)         | 4 (3)                   | 3                      |
| Safety concerns                                          | 15 (12)              | 55 (45)     | 32 (26)       | 18 (15)         | 1 (1)                   | 3                      |
| Lack of coordination within and between clinician groups | 14 (12)              | 44 (37)     | 30 (25)       | 27 (23)         | 5 (4)                   | 4                      |
| Prolonging the current working day                       | 4 (3)                | 21 (17)     | 43 (36)       | 41 (34)         | 12 (10)                 | 3                      |
| Patients barriers                                        |                      |             |               |                 |                         |                        |
| Levels of physiological instability                     | 48 (40)              | 53 (44)     | 12 (10)       | 7 (6)           | 1 (1)                   | 3                      |
| Sedation level                                           | 27 (22)              | 64 (53)     | 15 (12)       | 13 (11)         | 2 (2)                   | 3                      |
| Presence of endotracheal intubation levels              | 8 (7)                | 36 (30)     | 32 (26)       | 39 (32)         | 6 (5)                   | 3                      |
| Risk of device/line/catheter dislodgement levels        | 8 (7)                | 42 (35)     | 32 (26)       | 35 (29)         | 4 (3)                   | 3                      |
| Cognitive impairment/age levels                          | 1 (1)                | 32 (26)     | 29 (24)       | 46 (38)         | 13 (11)                 | 3                      |
| Obesity levels                                           | 6 (5)                | 14 (12)     | 35 (29)       | 52 (43)         | 14 (12)                 | 3                      |
|                                | 2 (2) | 38 (31) | 31 (26) | 43 (36) | 7 (6) | 3 |
|--------------------------------|-------|---------|---------|---------|-------|---|
| Patient motivation level       |       |         |         |         |       |   |
| Family concerns levels         | 2 (2) | 42 (35) | 35 (29) | 38 (31) | 4 (3) | 3 |

* Percentages may not total 100 due to rounding. * Skipped responses excluded from percent calculation.