Discussion The mortality rate among this population of patients with tuberculosis far exceeds that in the UK. Sadly a lake of resources, HIV coinfection and high rate of drug resistance (10% MDR rate) conspire to make TB a challenging disease to treat in this area of South Africa.

Respiratory critical care

P66 INTER-OBSERVER RELIABILITY OF ULTRASOUND TO MEASURE RECTUS FEMORIS CROSS-SECTIONAL AREA IN CRITICALLY ILL PATIENTS

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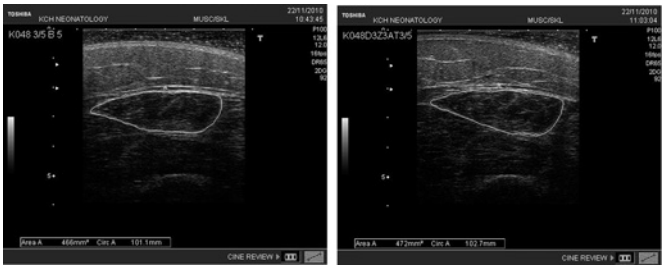
Introduction Ultrasound is a relatively simple, non-invasive, non-irradiating effort-independent tool to measure quadriceps rectus femoris cross-sectional area (RF_{CSA}) in critically ill patients. We investigated the inter-observer reliability of the technique to validate its clinical utility in this group of patients.

Methods Critically ill patients either in, or within 48 h discharge from, the Intensive Care Unit (ICU) underwent measurement of RF_{CSA} using real-time B-mode ultrasonography using an 8MHz 5.6 cm linear transducer (PLM805, Toshiba Medical Systems Ltd, Crawley, UK) at a distance three-fifths from the anterior superior iliac spine to the superior patellar border. Where complete visualisation of RF_{CSA} was not possible at this point, a more distal point of 2/3 of this distance was used. Ultrasound measurements were performed in turn by two critical care clinicians trained in ultrasound in a random order. The average of three consecutive measurements within 10% was taken as RF_{CSA} for each patient. Both clinicians were blinded to the results of the other.

Results 24 patients had RF_{CSA} measurements performed using ultrasound (M:F 14:10; mean age 55.3±20.1 years). Inter-observer reliability was assessed by considering the level of agreement between RF_{CSA} measurements for each patient between the two clinicians using intra-class correlation coefficients (ICC) adopting a two-way, random effects model for absolute agreement. An ICC of 0.99 (95% CI 0.97 to 0.99) was observed. Abstract P66 Figure 1 shows RF_{CSA} images from both clinicians for one patient.



Abstract P66 Figure 1 Ultrasound images from each clinician for one patients; RF_{CSA} outlined in blue.

Conclusion These data demonstrate high levels of inter-observer reliability between two trained critical care clinicians using ultrasound as a measurement technique for RF_{CSA} in critically ill patients. RF_{CSA} can be used as a novel, reproducible technique to track the trajectory of muscle loss in critically ill patients.

P67 CLINICAL PREDICTIVE VALUE OF THE MEDICAL RESEARCH COUNCIL SUMSCORE IN CRITICALLY ILL PATIENTS

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Introduction Manual muscle testing, in the form of the Medical Research Council sumscore (MRC-SS) is a widely accepted clinical tool for diagnosing intensive care unit-acquired weakness (ICU-AW). Although MRC-SS is a simple bedside test, the nature of the test is volitional limiting its ability to distinguish poor motivation and impaired cognition from actual loss of muscle function. The clinical predictive value of the MRC-SS therefore needs to be assessed.

Method Unselected adult ICU patients (≥18 years) ventilated for ≥48 h were eligible. The conscious level of the patients was determined using the Richmond Agitation Sedation Scale; a score −1 to +1 was indicative of awakening. Testing comprised of a two-stage process. *Stage 1:* Patients at awakening were required to follow 4 simple, one-stage commands. *Stage 2:* If all 4 one-stage commands were successfully completed, MRC-SS testing was performed by a specialist ICU rehabilitation clinician. ICU-AW was defined as MRC-SS <48. ICU and hospital mortality and length of stay (LOS) were recorded in all the patients.

Results 94 sequential awakening patients were recruited; 68.1% males (n=64), with a mean age for the whole cohort of 64.5±15.3 years. 29 patients were unable to successfully complete the 4 one-stage commands as a result of cognitive impairment. 65 patients completed the MRC-SS of whom 73.9% demonstrated ICU-AW at awakening. Results are shown in Abstract P67 table 1.

Abstract P67 Table 1 Summary of test characteristics of MRC-SS

Test characteristic	ICU mortality		ICU LOS (≤14; >14 days)		Hospital mortality		Hospital LOS (≤28; >28 days)	
	UTC	ICU-AW	UTC	ICU-AW	UTC	ICU-AW	UTC	ICU-AW
Sensitivity	0.69	0.88	0.22	0.93	0.56	0.81	0.17	0.84
Specificity	0.84	0.28	0.64	0.41	0.84	0.29	0.56	0.41
PPV	0.62	0.15	0.28	0.54	0.69	0.27	0.28	0.67
NPV	0.88	0.94	0.57	0.88	0.75	0.82	0.42	0.65

UTC (n=29). MRC-SS <48 (n=48). MRC-SS ≥48 (n=17).
ICU, Intensive Care Unit; ICU-AW, intensive care unit-acquired weakness; LOS, length of stay; NPV, negative predictive value; PPV, positive predictive value; UTC, unable to complete 4 one-stage commands.

Conclusion Almost a third of critically ill patients, from a sequential cohort, were unable to complete 4 one-stage commands and thus could not perform the MRC-SS. Although inability to successfully complete the one-stage commands conferred limited predictive value, those patients that could perform this task were more likely to survive ICU. Similarly an MRC-SS <48 at awakening, presumed indicative of ICU-AW, conferred limited predictive value. However an MRC-SS ≥48 predicted ICU and hospital survival as well as an ICU LOS <2 weeks. These data highlight the limitations of volitional tests in critically ill patients. It clearly challenges the current view that ICU-AW, as measured by volitional tests, is a predictor of poor outcome. These data confirm that preserved peripheral strength predicts a good outcome.