***Supplementary Material***

**Use of consumer wearables to monitor and predict pain of patients with sickle cell disease**

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# Supplementary Table 1

| **Metric** | **Mathematical formula** |
| --- | --- |
| Accuracy | Tp = true positive  Tn = true negative  Fp = false positive  Fn = false negative |
| Precision:  Recall:  F1-score | Tp = true positive  Fp = false positive  Fn = false negative |
| Area under the receiving operating characteristic curve | Tp = true positive  Tn = true negative  Fp = false positive  Fn = false negative |
| Root-mean-square error | Yp,i is the predicted output  Ya,i is the actual output. |

**Supplementary Table 1.** The formulas to calculate the metrics for the evaluation of the machine learning models.

# Supplementary Table 2

| **Model** | **Precision** | **Recall** |
| --- | --- | --- |
| Null model 1: Random | 0.20 | 0.20 |
| Null model 2: Mode | 0.27 | 0.27 |
| Multinomial Regression | 0.31 | 0.31 |
| Gradient Boosting | 0.41 | 0.41 |
| Random Forest | 0.63 | 0.63 |

**Supplementary Table 2.** Precisions and recalls of the machine learning models.

# Supplementary Data 3.

The code can be requested from Northwestern University’s online repository from the following link:

<https://doi.org/10.21985/n2-js7v-q051>.