Entities

medical_device (<u>serial_number</u>, description)

actuator (<u>serial_number</u>)

      serial_number: FK (medical device)

sensor (<u>serial_number</u>)

      serial_number: FK (medical device)

low_period (<u>s_week_day, s_time_zone, s_date_time, e_week_day, e_time_zone, e_date_time</u>)

high_period (<u>s_date_time, e_date_time</u>)

PAN (<u>domain</u>, phone_number)

patient (<u>NHS_number</u>, name, address)

municipality (<u>digit_code</u>, name)

Weak entities

settings (<u>week_day, time_zone, date_time, value, serial_number</u>)

      serial_number: FK (actuator)

readings (<u>week_day, time_zone, date_time, serial_number</u>)

      serial_number: FK (sensor)

pairs (<u>name, value, week_day, time_zone, date_time, serial_number</u>)

      week_day, time_zone, date_time, serial_number: FK (readings)

Relationships

connects (<u>serial_number, domain, s_week_day, s_time_zone, s_date_time, e_week_day, e_time_zone, e_date_time</u>)

serial_number: FK (medical_device)

    domain: FK (PAN)

    s_week_day, s_time_zone, s_date_time, e_week_day, e_time_zone, e_date_time: FK (low_period)

wears (<u>NHS_number, domain, s_week_day, s_time_zone, s_date_time, e_week_day, e_time_zone, e_date_time</u>)

    NHS_number: FK (patient)

    domain: FK (PAN)

    s_week_day, s_time_zone, s_date_time, e_week_day, e_time_zone, e_date_time: FK (low_period)

lives_with (<u>NHS_number1, NHS_number2, s_date_time, e_date_time</u>)

    NHS_number1: FK (patient)

    NHS_number2: FK (patient)

    s_date_time, e_date_time: FK (high_period)

lives_in (<u>NHS_number, digit_code, s_date_time, e_date_time</u>)

    NHS_number: FK (patient)

    domain: FK (municipality)

    s_date_time, e_date_time: FK (high_period)

Entity-Relationship Diagram

Entities and attributes:

- **patient**: NHS number, name, address
- **municipality**: digit_code, name
- **PAN**: domain, phone_number
- **medical_device**: serial_number, description
- **sensor**
- **actuator**
- **readings**: time (date_time, week_day, time_zone)
- **pairs**: name, value
- **settings**: value, time (date_time, week_day, time_zone)
- **end_time**: e_date_time, e_week_day, e_time_zone
- **start_time**: s_date_time, s_week_day, s_time_zone
- **low_period**
- **high_period**: e_date_time, s_date_time

Relationships:

- lives_with (patient — patient)
- lives_in (patient — municipality)
- wears (patient — PAN)
- connects (PAN — medical_device)
- IS A (medical_device — sensor, actuator)
- collects (sensor — readings)
- receives (actuator — settings)
- contain (readings — pairs)
- low_period (end_time, start_time)