**Core Use Case: Monitoring Air Quality with a Wristband for Asthma Patients**

**Actors:**

* Asthma Patient (Primary Actor)
* Wristband Device
* Mobile Application

**Stakeholders:**

* Asthma Patients
* Respiratory Therapists

**Preconditions:**

* The wristband is fully charged and worn by the patient.
* The mobile application is installed and connected with the wristband.
* Location services are enabled.

**Triggers:**

* The patient goes outside or enters an environment where air quality can vary.

**Main Success Scenarios (Basic Flow):**

1. Patient starts the wristband device and wears it.
2. The wristband begins real-time air quality monitoring using the sensors.
3. Wristband sends the air quality data to the mobile application continuously.
4. If air quality is at acceptable levels, the wristband light remains green.
5. If air quality begins to deteriorate but not hazardous, the wristband light turns yellow.
6. If the air quality goes beyond predefined hazardous stages:
   * The wristband vibrates and emits a sound alert.
   * The wristband light turns red.
   * The mobile app sends a notification detailing the air quality measurements.
7. Patient checks the mobile app for detailed readings and historical data.
8. Patient makes informed decisions such as moving to a different location or using preventive measures.

**Alternative Paths (Alternative Flow):**

1. **Low Battery Scenario:**
   * If the wristband battery is low:
     + The mobile app sends a notification about the battery status.
     + The wristband emits a different alert.
   * Patient charges the wristband.
2. **Lost Connection Scenario:**
   * If the wristband loses connection with the mobile application:
     + The wristband makes a beeping sound continuously for 10 seconds.
     + The mobile app sends a notification about lost connection.
   * Patient checks the connection settings and tries to reconnect the wristband.

**Postconditions:**

* Patient is aware of the air quality in their environment.
* The patient takes necessary actions based on the alerts and readings.
* Historical data of air quality is stored in the mobile application for later reference.

**Core User Profiles**

**Average User - Michael**

* **Role**: Middle school teacher. Often involved in outdoor activities with students.
* **Demographics**:
  + **Age**: 45
  + **Gender**: Male
  + **Culture**: Canadian
  + **Lifestyle preferences**: Semi-active, occasionally plays sports, non-smoker.
  + **Income**: Middle class.
  + **Educational status**: Bachelor's in Education.
  + **Personality**: Open to new experiences, somewhat tech-savvy.
* **Task Domain**: Diagnosed with asthma at a young age, carries an inhaler, has basic knowledge about triggers and management.
* **Technological (ICT)**: Comfortable with smartphones, computers, and basic tech gadgets. Uses technology mainly for work and leisure.
* **Human Factors & Accessibility**: Mild short-sightedness, uses glasses. No other significant impairments.
* **Information needs and preferences**:
  + **Must**: Instant alerts for harmful environments.
  + **Should**: Ability to review data over time.
  + **Could**: Tips for managing asthma based on data.
  + **Would Like**: Integration with calendar or daily planner apps and community sharing features.