**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.

**Use Case: Immediate High Risk Alert**

**Actors:**

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

**Stakeholders:**

* Asthma Patients
* Family or Caregivers

**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 enters an area with an immediately hazardous level of air quality.

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

1. The wristband detects extremely high levels of pollutants in the environment.
2. Without any delay, the wristband emits a vibration and urgent sound alert.
3. The wristband light flashes red rapidly.
4. The mobile app sends an emergency notification outlining the extreme air quality measurements.
5. The patient, recognizing the severity of the alert, immediately seeks a safer environment.
6. The app suggests immediate actions for the patient, such as using an inhaler or contacting medical help if required.
7. The patient follows recommendations and potentially contacts their practitioner if the situation feels severe.

**Alternative Paths (Alternative Flow):**

* If the patient doesn't respond to the alerts within a set time (e.g., 5 minutes), the app could have an option to send an emergency message to a close contact (like a family member) informing them about the patient's last known location and the air quality issue.

**Postconditions:**

* The patient has been alerted to a high risk environment and has taken immediate actions.
* This event is stored with high priority in the mobile application's historical data.

**Use Case: Routine Air Quality Check-in**

**Actors:**

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

**Stakeholders:**

* Asthma Patients

**Preconditions:**

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

**Triggers:**

* The patient wants to get an overview of the air quality for their day.

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

1. The patient opens the mobile app and navigates to the daily overview section.
2. The app displays an clean chart of air quality levels measured throughout the day.
3. The patient checks timeframes where the air quality wasn’t too good but not alarming.
4. The patient feels informed and makes plans to avoid those areas or times in the future.

**Alternative Paths (Alternative Flow):**

* If the patient has had multiple poor air quality experiences over a week, the app could suggest the pataient go for a check-up.

**Postconditions:**

* The patient is better informed about their daily exposure and has insights to plan their next day better.