HEOR Expert Dashboard: Project Requirements

1. Introduction & Purpose

The HEOR Expert Dashboard is a web-based application designed to provide US-based Health Economics and Outcomes Research (HEOR) professionals with a centralized, real-time view of critical news, alerts, and data relevant to their work. The primary goal is to enhance efficiency in monitoring the dynamic US pharmaceutical landscape, including regulatory changes, clinical trial updates, market access shifts, and public health trends, enabling faster, more informed decision-making.

2. User Roles

- **Primary User:** HEOR Expert (US Pharma)

3. Key Features

3.1. Dashboard Overview

- **Categorized News Feeds:** Display distinct sections for:
  - Regulatory Alerts (FDA: Approvals, Recalls, Labeling Changes)
  - Clinical Trial Updates (ClinicalTrials.gov: New studies, status changes, results)
  - Market Access & Payer News (PBM formulary changes, ICER reports, CMS policy)
  - Real-World Evidence (RWE) & Public Health Insights (CDC WONDER, AHRQ data, disease trends)
- **News Item Display:** Each news item should include:
  - Title (clickable link to source)
  - Brief snippet/summary
  - Source
  - Date/Timestamp (where available)
- **Loading & Error States:** Clear indicators for data loading and error messages if data retrieval fails.

3.2. Alerting Mechanism

- **Real-time/Near Real-time Updates:** Data should refresh automatically at specified intervals (e.g., daily for most public APIs, more frequently for critical alerts if feasible).
- **Visual Cues for New Content:** Highlight new or updated items since the last user session/refresh.
- **Configurable Alerts (Future Enhancement):** Allow users to set up personalized alerts based on keywords, therapeutic areas, or specific data types.

3.3. Search & Filtering (Future Enhancement)

- **Keyword Search:** Ability to search across all news categories.
- **Filter Options:** Filter news by category, source, date range, or therapeutic area.

4. Data Sources & APIs

The application will primarily leverage publicly available APIs and will require a backend component to manage API calls, data processing, and storage.

4.1. Public Data APIs (Mandatory for MVP)

- **openFDA API:**
  - **Drug Enforcement:** For recalls.
  - **Drug Adverse Events (FAERS):** For safety signals.
  - **Drug Labeling (SPL):** For new indications, warnings, dosage changes.
  - **National Drug Code (NDC) Directory:** For new drug/product listings.
- **ClinicalTrials.gov API:** For clinical study registrations, status changes, and summary results.
- **CDC WONDER API:** For public health data (mortality, natality, disease incidence).
- **AHRQ (Agency for Healthcare Research and Quality) Data:** Explore available APIs or structured data downloads for healthcare quality, cost, and utilization.

4.2. Commercial Data Sources (Critical for Phase 2/Future)

- **Payer Formulary & Policy Data:** Integration with commercial data providers (e.g., MMIT, Clarivate's Fingertip Formulary, IQVIA) is essential for comprehensive and timely market access insights, including:
  - Commercial, Medicare, and Medicaid formulary changes.
  - Prior authorization (PA) and step therapy requirements.

    - Coverage policies.
- **Real-World Evidence (RWE) Datasets:** Potential integration with de-identified claims and EHR data providers (e.g., Optum, Merative, Truveta) for deeper RWE insights.
- **HTA Body Reports (ICER):** While ICER publishes publicly, direct programmatic access to structured data from their reports would be beneficial if available through commercial partnerships.

5. Technical Requirements

5.1. Frontend

- **Framework:** React (as per the provided prototype).
- **Styling:** Tailwind CSS for responsive and modern UI.
- **Responsiveness:** Fully responsive design for optimal viewing on desktop, tablet, and mobile devices.

5.2. Backend (Mandatory)

- **Purpose:** Act as a proxy for external API calls, data aggregation, processing, and potentially caching.
- **Technology Stack:** (To be determined by development team, e.g., Node.js, Python/Flask/Django, Go, Java/Spring Boot).
- **API Management:** Handle API keys, rate limits, and error handling for external APIs.
- **Data Storage:** A database (e.g., PostgreSQL, MongoDB) to store processed news/alerts, user preferences (future), and potentially cached API responses.
- **Scheduled Jobs:** Implement cron jobs or similar for periodic data fetching from external APIs.

5.3. Architecture Considerations

- **Scalability:** Design for potential future growth in data volume and user base.
- **Security:** Implement robust security measures for data handling, user authentication (if implemented), and API keys.
- **Modularity:** Design components and services to be modular for easier maintenance and future enhancements.

6. Non-Functional Requirements

- **Performance:**

    - Dashboard load time: Target under 3 seconds.
    - Data refresh: As close to real-time as public APIs allow (e.g., daily for most, potentially hourly for critical alerts).
- **Usability:** Intuitive interface, easy navigation, clear presentation of information.
- **Reliability:** High availability (target 99.9% uptime).
- **Security:** Data encryption in transit and at rest. Adherence to best practices for API security.
- **Maintainability:** Well-documented code, clear architecture, easy to deploy and update.

7. Future Enhancements

- **User Authentication & Profiles:** Allow users to log in and save personalized preferences.
- **Customizable Feeds:** Users can select specific therapeutic areas, drug classes, or sources to follow.
- **Advanced Analytics & Visualization:** Incorporate charts, graphs, and trend analysis for key metrics (e.g., approval rates over time, recall trends).
- **Sentiment Analysis:** Analyze news snippets for positive/negative sentiment towards specific drugs or companies.
- **Integration with Internal Systems:** Connect with internal company data sources (e.g., sales data, internal forecasts).
- **Collaboration Features:** Allow users to share insights or comment on specific news items.
- **Mobile Application:** Dedicated mobile app for on-the-go access.