FIFA 2026 Epidemiology Packet — Draft for Regional Review

Greater Houston Area (City of Houston, Harris County, and Surrounding Jurisdictions)

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Contact:
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Purpose

Provide a concise, working compilation of infectious-disease considerations associated with 2026 FIFA World Cup elimination matches in Houston. This packet is intended to spark discussion, inform operational planning, and surface subject-matter validation across regional partners.

What this packet is

- A planning aid summarizing potential importation risks, transmission fit in Houston, clinical recognition notes, and suggested messaging/MCM staging for select countries' fan bases.

- A starting point to align triggers (surveillance, isolation, PEP windows, vector ops), communications, and cache/stock readiness across jurisdictions.

What this packet is not

- Not official guidance, not prescriptive, and not comprehensive for all conditions.

- Not a substitute for CDC/DSHS/health-system protocols or facility IPC policies.

- Not authored by an HCID subject-matter expert; expert review is requested.

- Not comprehensive to all countries potentially playing at NRG in Houston (four games have unknown competitors based on eliminations as the World Cup plays out).

- Not created with the awareness of which (if any) team will be base-camping in the Houston area (as this information will not become known likely until January)

Context

I serve as the PHEP Manager for Brazoria County and bring a CBRN-E strategic military background. I am not an HCID SME. This draft reflects open-source review and practical planning experience; it is offered “for discussion and refinement,” not as directive policy and not with prescriptive intent. With seven elimination matches drawing international travel, our combined expertise will determine the best-fit actions for our region to mitigate HCID and other hazards.

Requested actions from partners

1. **Validate content:** Confirm/clarify country-specific risks, clinical details, and recommended actions; identify omissions (live links included).

2. **Rate risks for our context:** Adjust importation and local-transmission potential using current surveillance and immunization data.

3. **Confirm time-sensitive windows:** Measles PEP (MMR ≤72 h; IG ≤6 days), meningococcal PEP (<24 h), pertussis household/high-risk PEP (≤21 days), Hep A PEP (≤14 days), and any special-pathogen pathways.

4. **Define operational triggers:**

    - Healthcare: isolation thresholds, testing send-outs, after-hours pathways, TB/MERS special-pathogen consults.

    - Community: vector-control activation criteria, risk communication, syndromic signals, venue coordination.

5. **Close MCM gaps:** Verify availability/rapid access to IG (measles/Hep A), macrolides for pertussis PEP, ceftriaxone and contact-PEP agents for IMD, JYNNEOS/TPOXX pathways (if indicated by networks), special-pathogen PPE and specimen shipping.

6. **Assign points of contact:** Facility, EMS, local health department, MVC/vector teams, and lab liaisons.

7. **Recommend next steps:** Tabletop or HVA refresh; joint comms toolkit; event-week courier/testing logistics; situational reporting cadence; information distribution across health networks and with all regional partners as early as possible.

How to use this packet

- **Tabs by country** provide: at-a-glance table, clinical picture, infectiousness and Houston fit, audience-specific messaging (suggested, I'm not an SME), MCM staging, and environmental notes.

- **Slide-ready Summary** at the end of each tab can drop into stakeholder briefings.

- Use local data to tailor the "Likely importation" and "Local transmission potential" columns and finalize triggers.

Distribution

PHEP leads; LHD epidemiology teams; hospital/health-system IPC; EMS/Fire; emergency management; MVC/vector control; academic partners; regional healthcare coalition; jurisdictional PIOs; anyone who may benefit or partner with us in keeping our communities health, informed, and safe.

Submission of edits / comments (optional but welcome)

Once again, I'm not a SME, all of this information was obtained open-source. I do not intend this product to be something that everyone/anyone else works on, merely to begin the conversation within our respective realms. If you have the time and decide to make updates, corrections, or edits, I would be most grateful (especially for my own education). Please return redlines or tracked-change comments to me by e-mail at any time. If easier, add notes directly in the right margin (comment balloons) or send a bullet list keyed to tab and section (if using the google document version not the PDF).

Acknowledgment

Thank you to our epidemiologists, infection preventionists, laboratorians, EMS, public health nurses, hospital partners, vector teams, emergency managers, academic advisors, and other partners. Your expertise ensures something like this packet (again, I’m just getting the ball rolling here) becomes accurate, actionable, and we support our people to the best of our ability.

Disclaimer

This draft is for planning and coordination. Final decisions should follow applicable laws, CDC/DSHS guidance, health-system policies, and incident command direction. All content should be validated by qualified subject-matter experts before implementation. I am not a subject matter expert.

FIFA 2026 Epidemiology Brief — Curaçao → Houston (HOU)

Bottom Line Up Front:

Condition	Likely importation by fans	Local transmission potential in Houston	Why this matters
Dengue (DENV 1–4)	High	Moderate (Aedes present in Harris County)	Endemic risk in Curaçao; regional surges; competent vectors in TX. (CDC)
Chikungunya (CHIKV)	Moderate	Moderate	Circulates in the region incl. Caribbean; history in Curaçao; Aedes in TX. Note: U.S. **chikungunya vaccine license suspended**. (Travel.gov)
Zika (ZIKV)	Low–Moderate	Low–Moderate	Current/past transmission in Curaçao; pregnancy risk; Aedes in TX. (CDC)
Leptospirosis	Low	Very low (not person-to-person)	Sporadic in Caribbean; exposure-driven; onward spread unlikely. (PMC)
Measles	Low–Moderate	Moderate (if introduced into undervaccinated clusters)	Global resurgence; all travelers should be MMR-immune. (CDC)
Typhoid fever	Low	Very low	CDC recommends vaccine for some travelers to Curaçao; secondary spread mainly via food handling. (CDC)

Houston context: **Aedes aegypti/albopictus** mosquitoes are established locally; Harris County routinely monitors **dengue, Zika, chikungunya**. Local transmission has occurred in the Gulf region and south TX. (Harris County Public Health)

Priority conditions (what to watch, how they present, what to stock, what to say)

1) Dengue

- **What it is / where from:** Aedes-borne flavivirus; endemic across the Caribbean, including Curaçao; PAHO reports sustained regional activity. (CDC)
- **Clinical picture:** 2–7 days of high fever, severe headache/retro-orbital pain, myalgias/arthralgias, rash. Warning signs near defervescence: abdominal pain, persistent vomiting, mucosal bleed, lethargy, hepatomegaly, rising Hct with falling platelets. **No NSAIDs.** (CDC)
- **Infectiousness / how it spreads:** Human–mosquito–human via **Aedes**; not directly person-to-person. Potential for **limited local transmission in Houston** if viremic travelers are bitten by local Aedes. (Texas Health Services)
- **Risk to U.S. public: Moderate** during warm months due to vector presence; population immunity is low. (Harris County Public Health)
- **Diagnostics:** RT-PCR or NS1 + IgM (parallel testing early in illness). (CDC)
- **Care / MCMs:** Supportive care; aggressive fluids during critical phase; **avoid aspirin/NSAIDs**; acetaminophen acceptable. Stock NS1/NAAT test capacity, IV crystalloids, labs for CBC/Hct monitoring, and protocols for severe dengue. (CDC)
- **Provider/HCW/EMS messaging:**
    - Ask about travel to Caribbean within 14 days for any undifferentiated febrile illness.
    - Draw dengue PCR/NS1 + IgM; repeat serology if needed.
    - No NSAIDs; discharge with clear return-precautions around defervescence; advise **mosquito avoidance** while febrile to prevent onward transmission. (CDC)
- **Public messaging:** “If you feel feverish after travel to the Caribbean, seek care and **avoid mosquito bites**; use repellent and rest.” (CDC)

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2) Chikungunya

- **What it is / where from:** Aedes-borne alphavirus with Caribbean circulation; Curaçao experienced outbreaks with documented **long-term arthralgia** burden. Regional activity persists. (OUP Academic)

- **Clinical picture:** Acute high fever and severe polyarthralgia/arthritis, often disabling; rash common. Chronic joint pain may last months.

- **Infectiousness / how it spreads:** Aedes-mediated; not person-to-person. **Potential for limited local transmission in Houston** given Aedes presence. (Harris County Public Health)

- **Risk to U.S. public: Moderate** for importation; **low–moderate** for onward local spread.

- **Diagnostics:** RT-PCR in first week; IgM thereafter (per routine arbovirus testing algorithms).

- **Care / MCMs:** Supportive, analgesia (avoid NSAIDs until dengue ruled out). **Vaccine note:** U.S. license for **IXCHIQ** was **suspended Aug 22 2025**; do **not** plan vaccine use as an MCM. (CDC)

- **Provider/HCW/EMS messaging:** Consider CHIKV in febrile travelers with severe joint pain; test for dengue concurrently; recommend bite avoidance while febrile.

- **Public messaging:** “Severe joint pain after Caribbean travel? Get tested. Protect others by **preventing mosquito bites**.” (CDC)

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3) Zika

- **What it is / where from:** Aedes-borne flavivirus with **current or past transmission in Curaçao**; pregnancy/birth-defect risk; sexual transmission possible. (CDC)

- **Clinical picture:** Often mild: fever, rash, conjunctivitis, arthralgia; many cases asymptomatic.

- **Infectiousness / how it spreads:** Aedes mosquitoes; **sexual transmission**; perinatal. **Low–moderate** potential for local spread in Houston (vector present), but current risk lower than 2016 peak. (Harris County Public Health)

- **Risk to U.S. public: Focused risk** for people who are pregnant or planning pregnancy. (CDC)

- **Diagnostics:** NAAT on serum/urine in acute phase; pregnancy-related testing per CDC guidance.
- **Care / MCMs:** Supportive; counseling on **pregnancy avoidance windows** and **condom use** after exposure; no vaccine. (CDC)
- **Provider/HCW/EMS messaging:** Screen reproductive-age travelers; follow CDC testing/counseling; coordinate with OB and public health on any pregnancy exposures. (CDC)
- **Public messaging:** "If pregnant or planning pregnancy, check CDC Zika guidance before travel; use repellent and condoms after return." (CDC)

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4) Leptospirosis

- **What it is / where from:** Bacterial zoonosis from animal urine-contaminated water/soil; reported across the Caribbean, with island-to-island variability. (PMC)
- **Clinical picture:** Fever, myalgias, headache; may progress to jaundice, renal failure, pulmonary hemorrhage.
- **Infectiousness / how it spreads: Not** spread person-to-person (rare); exposure-driven. **Onward community spread in Houston is very unlikely.**
- **Risk to U.S. public: Low**; consider in travelers with water-exposure and compatible illness.
- **Diagnostics:** Serology/PCR (timing-dependent).
- **Care / MCMs: Doxycycline** for mild disease; **IV penicillin** or **ceftriaxone** for severe. Ensure hospital awareness and stock for severe cases. (CDC)
- **Provider/HCW/EMS messaging:** Ask about freshwater/floodwater exposure; start empiric therapy in severe illness; notify public health if suspected.
- **Public messaging:** "Avoid swimming in or contacting **freshwater** that might be contaminated; shower after water sports; cover cuts." (CDC)

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5) Measles (importation risk)

- **What it is / where from:** Highly contagious rash illness; **CDC advises MMR for all international travelers** due to rising global cases; destination pages reiterate for Curaçao travel. Importations seed outbreaks in undervaccinated U.S. pockets. (CDC)
- **Clinical picture:** Fever, cough/coryza/conjunctivitis → rash; Koplik spots.
- **Infectiousness / how it spreads: Very high**; airborne; R_0 ~12–18.
- **Risk to U.S. public: Moderate** if introduced into undervaccinated groups; otherwise low.
- **Diagnostics/MCMs:** PCR; airborne isolation; post-exposure **MMR** (≤72 h) or **immune globulin** (≤6 days) for eligible contacts.

Medical countermeasures to stage (flagging items not typically emphasized for Houston)

- **Diagnostics**
    - Rapid access to **arboviral NAAT/NS1/IgM** (dengue, chikungunya, Zika); ensure courier pathways during tournament weeks. (CDC)
- **Supportive care for dengue/chikungunya**
    - **IV crystalloids**, protocols for critical-phase monitoring; patient education to **avoid NSAIDs** until dengue excluded. (CDC)
- **Leptospirosis therapy**
    - Ensure availability and clinician familiarity with **IV penicillin/ceftriaxone** for severe disease and **doxycycline** for mild disease. (Common drugs, but **flag for awareness**.) (CDC)
- **Vaccines**
    - **Chikungunya vaccine (IXCHIQ)**: **do not plan on using**—U.S. license **suspended Aug 22 2025**. (CDC)

    - **MMR**: ensure rapid access for post-exposure control.
    - **Typhoid vaccine**: not for receiving Houston residents, but **provider counseling** for outbound staff/volunteers traveling to Curaçao (if any). (CDC)

- **Vector control**
    - Coordinate with Harris County mosquito control for **around-case Aedes response** if an imported arboviral case is identified (source reduction, adulticiding as indicated). (Harris County Public Health)

Audience-specific messaging (ready for consideration by actual SMEs (unlike me))

Providers (ED/Urgent Care/Primary Care)

- Always ask: **travel to Caribbean ≤14 days?**
- Order **dengue NAAT/NS1 ± IgM**; consider chikungunya/Zika cotesting. Avoid NSAIDs until dengue excluded. Provide strict return precautions near defervescence. (CDC)
- Pregnant patients with relevant exposure: follow **CDC Zika** testing and counseling. (CDC)

Health-care workers (IP&C, OB, Lab)

- Implement triage prompts for **fever with recent Caribbean travel**.
- Ensure lab routing for **arbovirus testing** and OB pathways for Zika-related counseling/testing. (CDC)

EMS / First Responders

- Use standard precautions; arboviruses are **not** spread person-to-person.
- Communicate **travel history** to receiving facilities; advise febrile patients to **avoid mosquito exposure**. (Texas Health Services)

General Public (fans, hosts, volunteers)

- "**Don't let mosquitoes bite you—or bite others.**" Use EPA-registered repellent, wear long sleeves, tip/dump standing water; if you're sick after Caribbean travel, seek care and **stay under repellent**. (CDC)

- If you are **pregnant or planning pregnancy**, review CDC **Zika** guidance before travel and practice **condom use** after return for the recommended window. (CDC)

Environmental fit for Houston (will it spread here?)

- **Vectors: Aedes** mosquitoes (day-biting, container breeders) are established in Harris County; county materials already list dengue, Zika, chikungunya among monitored diseases. This creates **seasonal potential** for limited local transmission if a viremic traveler is bitten locally. (Harris County Public Health)

- **Seasonality & venues:** Warm, humid summer conditions, outdoor gatherings, and standing water (coolers, planters, construction sites) are conducive to Aedes breeding. **Risk elevation window**: late spring–early fall. (Harris County Public Health)

- **Non-vectorborne threats (measles, typhoid, leptospirosis):**

    - **Measles** can spread efficiently indoors if imported into undervaccinated groups; ensure rapid case finding and PEP. (CDC)

    - **Typhoid** secondary spread would hinge on an infected food handler; routine food safety controls keep risk **very low.**

    - **Leptospirosis** requires environmental exposure; onward person-to-person spread **not expected**.

Summary:

- **Top 3 from Curaçao:** Dengue, Chikungunya, Zika. **Why Houston cares:** Aedes are here. (Harris County Public Health)

- **Diagnostics to enable:** Dengue NAAT/NS1+IgM; chikungunya/Zika PCR/serology panels; clear courier paths. (CDC)

- **Treatment headlines:** Dengue = fluids/monitoring, **no NSAIDs**; Chikungunya = supportive; Zika = supportive + pregnancy counseling; Lepto = **doxycycline** (mild) or **IV penicillin/ceftriaxone** (severe). (CDC)

- **Vaccine note: Chikungunya vaccine not available in U.S. (license suspended 8/22/2025).** (CDC)

- **Public message:** “If you get a fever after Curaçao travel—**see care, use repellent, and don’t take NSAIDs**.” (CDC)

FIFA 2026 Epidemiology Brief — Germany → Houston (HOU)

Bottom Line Up Front:

Condition	Likely importation by fans	Local transmission potential in Houston	Why this matters
Measles (rubeola)	Moderate	High (in undervaccinated clusters)	EU/EEA resurgence in 2024–25; Germany reported hundreds of cases; measles is highly contagious and airborne. (World Health Organization)
Pertussis (whooping cough)	Moderate	Moderate–High (waning immunity)	Germany had a sharp increase in 2024; mass gatherings elevate exposure risk. (MDPI)
Mpox (monkeypox; clade IIb and limited clade I/ Ib events)	Low–Moderate (network-dependent)	Low–Moderate (close, often sexual contact)	Germany detected clade Ib in 2024 and continues to report cases; close-contact transmission in defined networks. (PMC)
Invasive meningococcal disease (IMD)	Low	Low–Moderate (close contacts)	Serious but uncommon; mass gatherings can seed sporadic clusters; rapid PEP stops spread. (kinderpraxis-jena.de)
Tuberculosis incl. MDR-TB	Low	Low (primarily prolonged close indoor exposure)	Germany reports MDR/RR-TB annually; health-care exposure planning needed. (Robert Koch Institute)
Tick-borne encephalitis (TBE)	Low (imported illness)	None (no competent local tick cycle)	Endemic in southern Germany; not spread person-to-person. (CDC)

Puumala hantavirus	Low (imported illness)	None	Germany sees cyclic hantavirus years; no person-to-person spread. (Nature)
XDR/MDR Shigella (sexual transmission networks)	Low	Low–Moderate (network-dependent)	EU/EEA has MDR/XDR clusters among MSM; requires specific diagnostics and IPC. (ECDC)

Houston context: Risk is driven by **airborne/droplet** (measles, pertussis, IMD, TB) and **close-contact** (mpox, some shigellosis) exposures rather than vectors. Aedes-borne threats are **not** Germany-linked. Mass-gathering mixing, crowded indoors, and travel-associated immunity gaps are the main amplifiers. (ECDC)

Priority conditions (clinical picture, infectiousness, risk rating, actions)

1) Measles

- **Description & situation:** Extremely contagious, airborne viral exanthem; EU/EEA surge in 2024–25 with **Germany among higher-reporting EU countries**. CDC urges MMR for all international travelers. (World Health Organization)
- **Clinical presentation:** Fever → cough/coryza/conjunctivitis → maculopapular rash; Koplik spots; infectious from 4 days before to 4 days after rash.
- **Infectiousness/how it spreads:** Airborne; R_0 ~12–18; viable in air for hours → **high local spread potential** in undervaccinated groups/indoor venues.
- **Risk to U.S. public: High** if introduced to undervaccinated clusters; otherwise moderate.
- **Diagnostics & MCMs:** RT-PCR; isolation. **Post-exposure prophylaxis (PEP): MMR ≤72 h** or **immune globulin ≤6 days** (do not co-administer). Ensure IG access. (CDC)
- **Key messaging:**
    - **Providers/HCW:** Ask about EU travel; airborne isolation; arrange PCR; activate PEP pathways rapidly. (CDC)

    - **EMS:** Standard/airborne precautions if rash + fever + travel; mask patient; relay travel history.

    - **Public:** Verify **MMR** status before attending; if exposed, seek guidance promptly for PEP. (CDC)

2) Pertussis

- **Description & situation:** Bordetella pertussis; **Germany recorded >25k cases in 2024** after pandemic lull; periodic EU waves. (MDPI)

- **Clinical presentation:** Catarrhal phase (nonspecific URI) → paroxysmal cough with whoop/post-tussive emesis; severe in infants.

- **Infectiousness/spread:** Respiratory droplets; household secondary attack rates high despite vaccination. (CDC)

- **Risk to U.S. public: Moderate–High** due to waning immunity; highest consequence for infants/pregnant contacts.

- **Diagnostics & MCMs:** PCR best early; macrolides first-line for treatment/PEP; TMP-SMX alternative. (CDC)

- **Key messaging:**

    - **Providers/HCW:** If subacute cough illness with EU travel or exposure—test and **consider PEP** for close contacts; review **Tdap** status. (CDC)

    - **EMS:** Droplet precautions; mask patient; consider vulnerability of infants at home.

    - **Public:** Booster vaccination on schedule; do not attend events while acutely coughing.

3) Mpox (clade IIb; limited clade I/Ib spillovers)

- **Description & situation:** Orthopoxvirus; **German detection of clade Ib (Oct 2024)**; ongoing cases mainly among MSM; **ECDC notes limited secondary clade I transmission reported by Germany**. (PMC)

- **Clinical presentation:** Vesiculopustular rash, anogenital lesions; fever, lymphadenopathy; can be mild or severe in immunocompromised.

- **Infectiousness/spread: Close, often sexual contact**; fomites possible; casual transmission uncommon; network-dependent spread → **Low–Moderate** local risk. (CDC)

- **Diagnostics & MCMs:** NAAT from lesions. **JYNNEOS** vaccine for at-risk persons (2 doses). **Tecovirimat** available under CDC EA-IND for severe/high-risk cases. (CDC)

- **Key messaging:**

    - **Providers/HCW:** Test compatible rashes; offer **JYNNEOS** to eligible at-risk patients per CDC; consult on **TPOXX** under EA-IND for severe disease. (CDC)

    - **EMS:** Standard precautions; cover lesions; mask patient if febrile respiratory symptoms.

    - **Public:** Risk-aware sexual health messaging; prompt evaluation of new rash.

4) Invasive meningococcal disease (IMD)

- **Description & situation:** Neisseria meningitidis; uncommon but severe; STIKO broadened MenB in 2024 in Germany (infants), reflecting prevention emphasis; adolescents/young adults are key carriage group. (PMC)

- **Clinical presentation:** Rapid fever, headache, neck stiffness, petechial/purpuric rash; sepsis.

- **Infectiousness/spread:** Respiratory droplets among **close contacts**; outbreaks linked to dense social mixing.

- **Risk to U.S. public: Low**, but **high consequence**—requires rapid recognition and **PEP** for contacts.

- **Diagnostics & MCMs:** Culture/NAAT; ceftriaxone empiric therapy. **PEP:** rifampin, ciprofloxacin, or ceftriaxone ASAP (ideally <24 h after index identification). (CDC)

- **Key messaging:**

    - **Providers/HCW:** Activate meningococcal **PEP cascade** for household/intimate/air-droplet exposure; notify public health immediately. (CDC)

5) Tuberculosis (incl. MDR/RR-TB)

- **Description & situation:** Germany reports MDR/RR-TB annually; most TB transmission requires **prolonged indoor exposure**. (Robert Koch Institute)
- **Clinical presentation:** Chronic cough, fever, weight loss, night sweats.
- **Infectiousness/spread:** Airborne in poorly ventilated spaces; sports-fan travel poses low risk unless active pulmonary TB present.
- **Risk to U.S. public: Low**; relevance is **health-care** triage/isolation and linkage to TB programs.
- **Actions:** Maintain rapid airborne isolation capacity; test & report per protocol; drug-susceptibility testing on isolates.

6) Tick-borne encephalitis (TBE) — traveler import risk only

- **Description & situation:** Endemic foci in **southern Germany (Baden-Württemberg, Bavaria) and other districts**; tick-borne; not human-to-human. (CDC)
- **Risk to Houston: No onward transmission** (no local enzootic cycle); clinical vigilance if a traveler presents post-tick exposure from Germany. (CDC)

7) Puumala hantavirus — traveler import risk only

- **Description & situation:** Bank-vole–borne; Germany reports cyclic outbreaks; fever, renal involvement. Not person-to-person. (Nature)
- **Risk to Houston: No onward transmission**.

8) Multidrug/extensively drug-resistant Shigella sonnei (sexual networks)

- **Description & situation:** EU/EEA clusters of MDR/XDR **S. sonnei** among MSM; severe/prolonged diarrhea; limited oral options. (ECDC)
- **Risk to Houston: Low overall**, **moderate in specific networks**; requires stool NAAT plus culture with susceptibilities; strict contact hygiene and counseling.

Audience-specific messaging (ready for consideration by actual SMEs (unlike me))

Providers (ED/Urgent Care/Primary Care)

- Any **fever/rash or subacute cough** in travelers from Europe: place mask, take travel history, test appropriately.
- **Measles PEP** windows: **MMR ≤72 h**, **IG ≤6 days**; do not co-administer. Coordinate immediately with public health. (CDC)
- **Pertussis:** test early (PCR); treat and **offer macrolide PEP** to close contacts per CDC. (CDC)
- **Mpox:** test compatible rashes; offer **JYNNEOS** to eligible at-risk patients; consult on **tecovirimat** under EA-IND for severe disease. (CDC)
- **IMD:** do not delay ceftriaxone; trigger contact **PEP** (rifampin/cipro/ceftriaxone). (CDC)

Health-care workers (IP&C, OB, Lab)

- Triage flag: "**EU travel ≤21–30 days** + fever/rash/cough."
- Ensure **measles/pertussis isolation** signage flows; lab ready for measles PCR and pertussis PCR.
- Mpox: specimen handling + linkage to **JYNNEOS** access and EA-IND **TPOXX** protocols. (CDC)
- Consider **CPE/CRO screening** policies for inpatients with recent overseas health-care contact (risk-based). (ECDC)

EMS / First responders

- Mask coughing or rash-and-fever patients; standard/droplet/airborne per dispatch protocols; relay **travel history**.
- Mpox: cover lesions; gloves/gown; routine decontamination.

General public (fans, hosts, volunteers)

- Verify **MMR** status; stay home if ill; wear a mask if coughing. (CDC)
- For sexually active attendees in higher-risk networks: consider **JYNNEOS**; seek care for new rash. (CDC)

Medical countermeasures to stage (flagging items not typically emphasized for Houston)

- **Measles PEP:** Ensure rapid access to **MMR vaccine** for exposures and **immune globulin (IG)** (IM/IV) — IG may not be widely stocked on routine shelves; coordinate with DSHS/CDC for surge. (CDC)
- **Pertussis: Azithromycin/clarithromycin/erythromycin** (treatment and PEP) with quick dispense pathways; TMP-SMX as alternative. (CDC)
- **Mpox:** Local access plans for **JYNNEOS** vaccination (2-dose) for at-risk persons; provider familiarity with **TPOXX** EA-IND access and documentation. (CDC)
- **IMD:** Stock **rifampin, ciprofloxacin, ceftriaxone** for contact PEP; standing orders to deploy within **24 h** of case identification. (CDC)
- **Diagnostics:** Measles PCR, pertussis PCR; mpox NAAT; stool culture with susceptibility for Shigella; TB NAAT and culture with rapid DST.
- **AMR screening (admissions):** Policy for **carbapenemase-producing Enterobacterales** risk-based screening of patients with recent international hospitalization. (ECDC)

How easily each spreads, and Houston environmental fit

- **Measles: Airborne**, extremely contagious; indoor arenas, fan zones, hotels = favorable for spread if an index case enters undervaccinated settings. **High local potential** without rapid control. (World Health Organization)
- **Pertussis: Droplet**; prolonged close contact; waning immunity elevates risk in adults → **Moderate–High** potential for clusters, especially among households/roommates. (MDPI)

- **Mpox:** Requires **close (often sexual) contact**; **Low–Moderate** spread limited to specific networks; targeted outreach is effective. (CDC)
- **IMD: Droplet/close contact**; **Low** baseline but **high consequence**; swift PEP prevents secondary cases. (CDC)
- **TB: Airborne** but needs prolonged exposure; **Low** event-related transmission risk; health-care isolation is key. (Robert Koch Institute)
- **TBE/Hantavirus: No person-to-person**; **no environmental continuation** in Houston. (CDC)
- **XDR Shigella: Fecal–oral**, often **sexual transmission**; **Low** community risk, **moderate** in affected networks; hygiene counseling and targeted clinical guidance limit spread. (ECDC)

Summary:

- **Top watch-outs from Germany: Measles**, **Pertussis**, **Mpox**, **IMD**.
- **PEP windows:** Measles **MMR ≤72 h / IG ≤6 days**; **IMD PEP <24 h** for close contacts; **Pertussis** macrolide PEP for household/high-risk exposures. (CDC)
- **Mpox tools: JYNNEOS** for eligible at-risk persons; **TPOXX** via EA-IND for severe cases. (CDC)
- **Environmental fit:** No Germany-linked vector threats; focus on **airborne/droplet/close-contact** mitigation in crowded indoor spaces. (ECDC)

FIFA 2026 Epidemiology Brief — Portugal → Houston (HOU)

Bottom Line Up Front:

Condition	Likely importation by fans	Local transmission potential in Houston	Why this matters
Measles (rubeola)	Moderate	High in undervaccinated clusters	Europe had record measles in 2024; outbreaks persisted into 2025. Highly contagious and airborne. (World Health Organization)
Mpox (clade IIb; sporadic clade Ib reports)	Low–Moderate (network-dependent)	Low–Moderate (close/sexual contact)	Portugal reported clade Ib activity in Oct 2025; WHO notes no further clade Ib cases since then, with prevention ongoing. (ECDC)
Dengue (Madeira)	Low (but real)	**Moderate** (Aedes present in Houston)	Madeira confirmed **local** dengue with virus detected in mosquitoes in Jan–Feb 2025; Houston has competent vectors. (ECDC)
Crimean-Congo hemorrhagic fever (CCHF)	Very Low	None (no person-to-person except high-risk healthcare exposure)	Portugal confirmed its **first** human CCHF case in 2024 and a **fatal** case in 2025; high-consequence VHF—healthcare IPC critical. (izs.it)
Invasive meningococcal disease (IMD)	Low	Low–Moderate (close contacts)	Rare but severe; mass gatherings raise exposure to carriers. (SpringerLink)

Tuberculosis (incl. MDR/RR-TB)	Low	Low (prolonged indoor exposure)	Portugal participates in EU TB surveillance; risk primarily healthcare-managed. (ECDC)
Mediterranean spotted fever (Rickettsia conorii)	Low (traveler import)	None	Endemic in Portugal; not person-to-person. (PubMed)
AMR threats (e.g., CRE/CPE, XDR Shigella in MSM networks)	Low	Low–Moderate (healthcare or network-dependent)	EU/EEA notes increasing CRE pressure; MSM-associated Shigella outbreaks recur in Europe. (ECDC)

Houston context: greatest risks are **airborne/droplet** (measles) and **close/sexual-contact** (mpox, some shigellosis) exposures; **Aedes** mosquitoes in our area create a **credible dengue amplification risk** if a viremic traveler seeds local transmission. (Harris County Public Health)

Priority conditions (clinical picture, infectiousness, risk rating, actions)

1) Measles

- **Description & situation:** Extremely contagious airborne viral exanthem. Europe recorded the **highest year since 1997** in 2024; transmission continued in 2025. (World Health Organization)
- **Presentation:** Fever → cough/coryza/conjunctivitis → maculopapular rash; Koplik spots; infectious from 4 days before to 4 days after rash.
- **Infectiousness & Houston fit:** Airborne; R_0 12–18; indoor arenas/hotels favor spread → **High local potential** in undervaccinated groups.
- **Risk to U.S. public: High consequence / Moderate likelihood**—U.S. under-vaccinated pockets and recent Texas outbreaks show susceptibility. (Houston Chronicle)
- **Diagnostics & MCMs:** RT-PCR; immediate airborne isolation. **PEP: MMR ≤72 h** or **immune globulin ≤6 days** (not co-administered).

(measles-rubella-monthly.ecdc.europa.eu)

- **Key messaging:**
    - **Providers/HCW:** Ask about EU travel; airborne isolation; order PCR promptly; activate PEP cascade. (measles-rubella-monthly.ecdc.europa.eu)
    - **EMS:** Mask febrile rash patients; relay travel/venue exposures.
    - **Public:** Verify **MMR** before events; if exposed, call for PEP guidance. (measles-rubella-monthly.ecdc.europa.eu)

2) Mpox (clade IIb; limited clade Ib signal)

- **Description & situation:** Orthopoxvirus; sustained transmission in MSM networks across Europe; **Portugal reported a clade Ib case in Oct 2025;** WHO notes **no further clade Ib detections** since and ongoing prevention. (ECDC)
- **Presentation:** Vesiculopustular rash (often anogenital), fever, lymphadenopathy; may be mild or severe if immunocompromised.
- **Spread & Houston fit: Close, often sexual contact**; fomites possible; casual spread uncommon → **Low–Moderate** local risk, network-dependent.
- **Diagnostics & MCMs:** Lesion NAAT. **JYNNEOS** vaccine for eligible at-risk persons; **tecovirimat (TPOXX)** available under CDC pathways for severe disease—clinical benefit remains uncertain; align to CDC guidance. (CDC)
- **Messaging:**
    - **Providers/HCW:** Test compatible rashes; offer **JYNNEOS** per eligibility; consult on **TPOXX** access if severe/high-risk. (CDC)
    - **EMS:** Standard precautions; cover lesions; mask if respiratory symptoms.
    - **Public:** Risk-aware sexual health messaging; prompt evaluation of new rash.

3) Dengue (Madeira)

- **Description & situation: Local transmission confirmed in Madeira in Jan–Feb 2025**, with dengue virus detected in captured **Aedes aegypti**. (ECDC)

- **Presentation:** Acute fever, myalgias/arthralgias, retro-orbital pain; warning signs for severe dengue (abdominal pain, vomiting, mucosal bleed).

- **Spread & Houston fit:** Mosquito-borne. **Houston/Harris County has Aedes and active arbovirus surveillance**, and Texas reported local dengue in 2024—so **credible potential** for limited local amplification if a viremic traveler arrives. (Harris County Public Health)

- **Risk to U.S. public: Low–Moderate** (import dependent) but **environmentally plausible**.

- **Diagnostics & MCMs:** NS1/RT-PCR early; IgM later; supportive care. **Vaccines:** In the U.S., **Dengvaxia** is limited to previously infected 9–16 y residents of endemic U.S. territories; **Qdenga (TAK-003)** is **not** approved for U.S. travelers. (CDC)

- **Messaging:**

    - **Providers/HCW:** Test febrile travelers from Madeira or with EU trip + mosquito exposure; advise repellents.

    - **Public:** "**Drain & Cover**" messaging; repellents; avoid mosquito exposure at outdoor fan zones.

4) Crimean-Congo hemorrhagic fever (CCHF) — HCID

- **Description & situation:** Tick-borne VHF. **Portugal reported its first confirmed human case (Aug 2024) and a fatal case (2025).** (izs.it)

- **Presentation:** Sudden fever, myalgia → hemorrhagic signs, shock in severe disease.

- **Spread & Houston fit: Tick-borne;** person-to-person mainly via **blood/body fluids** in healthcare settings; **no community onward transmission** expected in Houston.

- **Risk to U.S. public: Very Low likelihood / High consequence.**

- **Diagnostics & MCMs:** RT-PCR under BSL-3/4 labs via CDC. **Ribavirin** sometimes used off-label; evidence mixed—plan for consultation with CDC VHF specialists rather than routine stockpiling. (World Health Organization)

- **Messaging:**

    - **Providers/HCW:** If severe febrile illness with bleeding + rural Iberian exposure, **isolate with enhanced precautions** and **call public health/CDC** immediately;

lab coordination essential. (CDC)

5) Invasive meningococcal disease (IMD)

- **Description:** Rare but rapidly fatal sepsis/meningitis; carriage among adolescents/young adults; IMD patterns described in Portugal. (SpringerLink)
- **Spread & Houston fit: Droplet spread to close contacts.**
- **Risk: Low likelihood / High consequence** at mass gatherings.
- **MCMs & Messaging:** Ceftriaxone empiric therapy; **PEP** for close contacts (**rifampin, ciprofloxacin, or ceftriaxone**); activate contact tracing rapidly. (CDC/ECDC standard practice.) (ECDC)

6) Tuberculosis (incl. MDR/RR-TB)

- **Situation:** Ongoing EU burden; risk to fans is **low** unless prolonged exposure to a contagious case; main need is healthcare recognition/isolation. (ECDC)
- **Actions:** Maintain airborne isolation/NAAT capacity; link to TB programs.

7) Mediterranean spotted fever (Rickettsia conorii) — traveler import

- **Situation:** Endemic in Portugal; dog-tick (Rhipicephalus sanguineus) vector; **not person-to-person.** (PubMed)
- **Clinical:** Fever, maculopapular rash, **tache noire** at bite site; treat with **doxycycline**.
- **Risk to Houston: No onward transmission**; clinical vigilance only.

Audience-specific messaging (ready for consideration by actual SMEs (unlike me))

Providers (ED/Urgent Care/Primary Care)

- **Measles:** Mask, **airborne isolation**, PCR, and **PEP within windows** (MMR ≤72 h; IG ≤6 days). Coordinate with public health. (measles-rubella-monthly.ecdc.europa.eu)

- **Mpox:** Test compatible rashes; offer **JYNNEOS** to eligible at-risk patients; **TPOXX** only with CDC pathways for severe disease. (CDC)

- **Dengue:** Order **NS1/PCR** for febrile travelers (incl. Madeira); counsel on fluid management and warning signs.

- **IMD: Do not delay ceftriaxone**; trigger **PEP** cascade for close contacts. (ECDC)

- **CCHF (rule-out):** Severe febrile + hemorrhagic signs after rural Iberia/animal/tick exposures → **isolate, notify**, coordinate testing via CDC; discuss ribavirin case-by-case with experts. (CDC)

Health-care workers (IP&C, Lab, OB)

- Triage flag: "**EU travel ≤21–30 days** + fever/rash/cough/bleeding."

- Ensure signage/flows for **airborne** (measles), **droplet/contact** (mpox/IMD).

- Lab readiness for measles PCR, pertussis PCR (background), dengue NS1/PCR; packaging/transport for VHF rule-outs.

- **JYNNEOS access** plan and **TPOXX** documentation workflows. (CDC)

EMS / First responders

- Mask coughing or rash-with-fever patients; standard/droplet/airborne per dispatch; relay **travel/venue** details.

- Mpox: cover lesions; routine decon.

General public (fans, volunteers, hosts)

- Verify **MMR**; **stay home if ill**; use repellents and **drain standing water**; consider risk-aware sexual health practices during events. (measles-rubella-monthly.ecdc.europa.eu)

Medical countermeasures to stage (flagging items not typically emphasized for Houston)

- **Measles PEP:** Rapid access to **MMR** and **immune globulin (IG)**—IG often **not routinely stocked** in quantity; pre-arrange pathways (DSHS/CDC). (measles-rubella-monthly.ecdc.europa.eu)
- **Mpox:** Access plan for **JYNNEOS** (at-risk populations) and **TPOXX** under CDC mechanisms for severe cases; provider training on current evidence and documentation. (CDC)
- **IMD: Rifampin, ciprofloxacin, ceftriaxone** for contact **PEP**; standing orders for <24 h deployment. (ECDC)
- **Dengue:** No traveler-indication vaccines in U.S.; ensure **NS1/PCR** diagnostics and supportive care protocols; reinforce vector control surge with Harris County MVC. (CDC)
- **CCHF (HCID):** Do **not** stockpile broadly; establish **consultation & referral pathway** with CDC VHF branch. **Ribavirin** is off-label with mixed evidence; maintain formulary awareness and PPE protocols rather than bulk purchase. (World Health Organization)

How easily each spreads & Houston environmental fit

- **Measles: Airborne**, extremely contagious; arenas/hotels/fan-zones = high risk if an index case enters undervaccinated settings. (World Health Organization)
- **Mpox:** Requires **close/skin-to-skin (often sexual) contact**; **Low–Moderate** spread limited to specific networks with targeted outreach. (World Health Organization)
- **Dengue: Mosquito-borne**; **Aedes** established locally; **plausible limited local spread** if a viremic traveler seeds transmission. (Harris County Public Health)
- **IMD: Droplet/close contact**; **low** baseline but **high consequence**; swift **PEP** breaks chains. (ECDC)
- **CCHF/MSF: No person-to-person** (except high-risk healthcare exposure for CCHF); no environmental continuation expected in Houston. (CDC)

- **TB: Airborne** but needs prolonged exposure; **low** event-related risk; healthcare isolation is key. (ECDC)

Summary:

- **Top watch-outs from Portugal: Measles**, **Mpox (clade Ib signal noted Oct 2025)**, **Dengue (Madeira)**, **CCHF (HCID, very low likelihood, high consequence)**. (ECDC)

- **PEP windows:** Measles **MMR ≤72 h / IG ≤6 days**; **IMD PEP <24 h** for close contacts; **Mpox** vaccination (**JYNNEOS**) for eligible at-risk persons. (measles-rubella-monthly.ecdc.europa.eu)

- **Vector fit: Aedes** present in Harris County; prepare for **dengue import with local amplification risk**; coordinate with MVC on surveillance and messaging. (Harris County Public Health)

- **HCID prep:** Build **CCHF** recognition + isolation + CDC consult workflow; avoid unnecessary ribavirin stockpiles; prioritize PPE and lab routing. (CDC)

Notes on items outside routine Houston stock

- **Immune globulin for measles PEP** (volume/logistics can be challenging). (measles-rubella-monthly.ecdc.europa.eu)

- **TPOXX (tecovirimat)** access under CDC mechanisms (paperwork/IND familiarity). (CDC)

- **Ribavirin** (off-label for CCHF; consult CDC)—formulary awareness only. (CDC)

- reuters.com
- reuters.com
- Houston Chronicle

FIFA 2026 Epidemiology Brief — The Netherlands → Houston (HOU)

Bottom Line Up Front:

Condition	Likely importation by fans	Local transmission potential in Houston	Why this matters
Measles (rubeola)	**Moderate**	**High** in undervaccinated clusters	NL reported **538 cases in 2025**; measles is airborne with very high transmissibility. (RIVM)
Pertussis (whooping cough)	Moderate	Moderate (household/close contacts, infants)	NL had a major 2024 surge; 2025 lower but ongoing activity. PEP can blunt spread. (RIVM)
Mpox (clade IIb; clade Ib detected locally in NL)	Low–Moderate (network-dependent)	Low–Moderate (close/sexual contact)	NL confirmed **first clade Ib case 17 Oct 2025** with local transmission noted by ECDC. (RIVM)
Invasive meningococcal disease (IMD)	Low	Low–Moderate (close contacts)	High-consequence sepsis/meningitis; MenACWY used in NL. (RIVM)
Tuberculosis (incl. MDR/RR-TB)	Low	Low (prolonged indoor exposure)	NL reported **768 cases in 2024** (return to pre-pandemic levels). Risk is mainly clinical recognition/isolation. (RIVM)
XDR Shigella (MSM-associated networks)	Low	Low–Moderate (network-dependent)	Europe reports XDR *S. sonnei* clusters in MSM networks; NL participates in surveillance. (ECDC)
Tick-borne encephalitis (TBE)	Low (traveler import)	None	Autochthonous TBE exists in NL; **not person-to-person**. (RIVM)

Houston context: Airborne/droplet threats (**measles, pertussis**), close/sexual-contact networks (**mpox, shigella**), and high-consequence but low-likelihood conditions (**IMD, TB**) are the priorities. Aedes mosquitoes are established locally, but NL isn't a dengue source; maintain usual vector readiness. (Harris County Public Health)

Priority conditions (clinical picture, infectiousness, risk rating, actions)

1) Measles

- **What/where:** Highly contagious airborne viral exanthem; **538 NL cases in 2025** (family/school clusters). (RIVM)
- **Presentation:** Fever → cough/coryza/conjunctivitis → maculopapular rash; Koplik spots; infectious from 4 days before to 4 days after rash.
- **Spread & Houston fit:** Airborne (R_0 12–18); arenas/hotels/fan zones elevate risk—**High local potential** in undervaccinated pockets.
- **Risk to U.S. public: High consequence / Moderate likelihood** during mass gatherings.
- **Diagnostics & MCMs:** RT-PCR; **PEP windows—MMR ≤72 h** or **immune globulin (IG) ≤6 days** (do not co-administer). (CDC)
- **Messaging:**
    - **Providers/HCW:** Immediate **airborne isolation**, PCR, confirm immune status, activate PEP cascade; adhere to CDC IPC. (CDC)
    - **EMS:** Mask febrile rash patients; relay travel/venue exposures.
    - **Public:** Verify **MMR** before events; if exposed, call for PEP guidance. (CDC)

2) Pertussis (whooping cough)

- **What/where:** NL experienced a **large 2024 epidemic**; 2025 reports are lower but persistent. (RIVM)

- **Presentation:** Catarrhal phase → paroxysmal cough with post-tussive emesis/apnea (infants).
- **Spread & Houston fit:** Droplet/close contact; household spread common; infants at highest risk.
- **Risk to U.S. public: Moderate consequence / Moderate likelihood** (import dependent, high impact in infants).
- **Diagnostics & MCMs:** PCR; **macrolides** first-line; **PEP** for **household contacts ≤21 days** from index cough onset and for high-risk settings. (CDC)
- **Messaging:**
    - **Providers/HCW:** Test early; start macrolides; prioritize **PEP** for infants/households/OB units; monitor for macrolide resistance trends. (CDC)
    - **EMS:** Mask/treat as droplet; advise destination ED of infant exposures.
    - **Public:** Stay home if coughing; ensure **Tdap** up to date (pregnancy dose each pregnancy).

3) Mpox (monkeypox) — clade IIb with clade Ib detected in NL

- **What/where:** NL confirmed **first clade Ib case 17 Oct 2025**; ECDC reports **local Ib transmission** in NL (and other EU states). (RIVM)
- **Presentation:** Vesiculopustular rash (often anogenital), fever, lymphadenopathy; pain common.
- **Spread & Houston fit:** Requires **close skin-to-skin/sexual contact**; casual spread uncommon → **Low–Moderate** network-dependent risk.
- **Diagnostics & MCMs:** Lesion NAAT; **JYNNEOS** for eligible persons; **tecovirimat (TPOXX)** available via CDC **EA-IND** for severe/high-risk cases. (CDC)
- **Messaging:**
    - **Providers/HCW:** Test compatible rashes; offer **JYNNEOS** per risk; consult public health for **TPOXX** under EA-IND. (CDC)
    - **EMS:** Standard precautions; cover lesions; mask if respiratory symptoms.

    - **Public:** Risk-aware sexual health messaging; prompt evaluation of new rash.

4) Invasive meningococcal disease (IMD)

- **What/where:** Rapidly progressive meningitis/sepsis; NL deploys MenACWY; MenB assessed in 2025 report. (RIVM)
- **Presentation:** Fever, petechial/purpuric rash, meningismus, shock.
- **Spread & Houston fit: Droplet** among close contacts (household, intimate, dormitory).
- **Risk to U.S. public: Low likelihood / High consequence** at mass gatherings.
- **MCMs & messaging:** Immediate **ceftriaxone**; **PEP** for close contacts (**rifampin, ciprofloxacin, or ceftriaxone**); activate contact tracing fast (standard CDC/ECDC practice). (RIVM)

5) Tuberculosis (incl. MDR/RR-TB)

- **What/where:** NL reported **768 TB cases in 2024** (pulmonary TB >60%); return to pre-pandemic levels. (RIVM)
- **Spread & Houston fit: Airborne**, but typically requires prolonged exposure; event-related risk is low; focus on healthcare recognition/isolation.
- **Actions:** Maintain airborne isolation capacity, rapid NAAT, and linkage to TB programs; be alert to MDR risk per European surveillance. (ECDC)

6) Tick-borne encephalitis (traveler import)

- **What/where: Autochthonous TBE** and seropositive ticks/rodents reported in several NL regions; **not person-to-person**. (RIVM)
- **Clinical:** Biphasic illness; neuroinvasive disease possible.
- **Houston fit: No onward transmission**; clinical recognition in travelers only.

7) XDR Shigella sonnei (MSM networks)

- **What/where:** EU-wide MSM-associated XDR clusters; NL surveillance documents STI burdens; XDR shigella remains a concern. (ECDC)

- **Clinical:** Acute febrile diarrhea; may be severe; notable resistance to azithro/cipro in XDR strains.

- **Spread & fit:** Fecal-oral, often sexual transmission; **network-focused** risk during mass gatherings.

Audience-specific messaging (ready for consideration by actual SMEs (unlike me))

Providers (ED/Urgent Care/Primary Care)

- **Measles:** Ask about EU travel and **airborne isolate immediately**; order **RT-PCR**; **PEP: MMR ≤72 h** or **IG ≤6 days**; do **not** co-administer. (CDC)

- **Pertussis:** Test early; treat with **macrolides**; provide **PEP ≤21 days** to household/high-risk contacts (infants, OB units). (CDC)

- **Mpox:** Test lesions; offer **JYNNEOS** to eligible patients; use **TPOXX via CDC EA-IND** for severe/high-risk disease in consultation with public health. (CDC)

- **IMD: Do not delay ceftriaxone**; start **PEP** for close contacts promptly. (RIVM)

- **TB:** Airborne isolation for suspected pulmonary TB; coordinate with TB control. (RIVM)

Health-care workers (IP&C, Lab, OB)

- Triage flag: "**Europe travel ≤21–30 days** + fever/rash/cough/meningismus."

- Ensure airborne rooms (measles/TB), droplet/contact workflows (pertussis/mpox).

- Lab: measles PCR; pertussis PCR; stool culture/AST for shigella; packaging/transport for special pathogens as required.

- Mpox: establish **JYNNEOS** access and **TPOXX EA-IND** documentation pathways. (CDC)

EMS / First responders

- Mask coughing or fever-with-rash patients; droplet/airborne per dispatch; document **travel and venue** exposures.
- Cover visible mpox lesions; standard decon.

General public (fans, volunteers, hosts)

- Verify **MMR**; **stay home if ill**; seek care for fever-rash or severe cough; risk-aware sexual health practices during events. (CDC)

Medical countermeasures to stage (flagging items not typically emphasized for Houston)

- **Measles PEP:** Ensure rapid pathways to **MMR** and **immune globulin (IG)**—IG often limited locally; pre-arrange procurement (DSHS/CDC). (CDC)
- **Pertussis:** Macrolides (azithro/clarithro/erythro) and **PEP protocols**; prioritize infants/households/OB units. (CDC)
- **Mpox: JYNNEOS** supply and eligibility workflows; **TPOXX** via **CDC EA-IND** (train clinicians on indications and paperwork). (CDC)
- **IMD: Rifampin, ciprofloxacin, ceftriaxone** for contact **PEP** with <24-hour deployment capability. (Per NL/EU practice for IMD control.) (RIVM)
- **TB:** Maintain airborne isolation capacity; rapid NAAT; linkage with county TB program. (RIVM)

How each spreads & likelihood of continued transmission in Houston

- **Measles: Airborne**; highly infectious—**sustained local spread possible** in undervaccinated clusters during mass gatherings. (RIVM)

- **Pertussis: Droplet**; household/close-contact spread—**moderate** potential; prioritize infant protection and PEP. (CDC)
- **Mpox: Close/skin-to-skin (often sexual)**; **low–moderate** ongoing spread limited to specific networks with targeted outreach. (ECDC)
- **IMD: Droplet** among close contacts; **low** baseline but **high consequence**; swift **PEP** breaks chains. (RIVM)
- **TB: Airborne** but needs prolonged exposure; **low event-related risk**; healthcare isolation limits spread. (RIVM)
- **TBE:** Vector-borne in NL only; **no person-to-person → no Houston continuation**. (RIVM)
- **Shigella (XDR): Fecal-oral/sexual**; **network-dependent** clusters possible; ensure culture/AST and sexual health messaging. (ECDC)

Houston environmental notes (for vector teams & situational awareness)

- **Aedes mosquitoes** (aegypti/albopictus) are established; maintain routine arbovirus readiness (drain/cover messaging, MVC surge). (Harris County Public Health)
- **Texas has documented local dengue transmission (2024)**—not directly NL-linked, but indicates environmental plausibility for arboviral amplification if viremic travelers arrive. (Texas Health Services)

Summary:

- **Top watch-outs from the Netherlands: Measles**, **Pertussis**, **Mpox (clade Ib signal)**; plus **IMD/TB** as high-consequence clinical rule-outs; **TBE** and **XDR shigella** as traveler/network issues. (RIVM)
- **PEP windows:** Measles **MMR ≤72 h / IG ≤6 days**; Pertussis **household/high-risk PEP ≤21 days**; IMD close-contact **PEP <24 h**. (CDC)

- **Stockgaps to address now: Immune globulin** for measles PEP; **TPOXX EA-IND** process readiness; IMD **PEP** agents staged. (CDC)

FIFA 2026 Epidemiology Brief — Uzbekistan → Houston (HOU)

Executive summary (at-a-glance)

Condition	Likely importation by fans	Local transmission potential in Houston	Why this matters
Measles (rubeola)	**Moderate**	**High** in undervaccinated clusters	Uzbekistan reported recent activity; measles is airborne with very high transmissibility; PEP windows are short. (Gavi/WHO · CDC)
Hepatitis A (HAV)	Moderate	**Moderate**	Large 2024 outbreak in Uzbekistan (≥9,500 pediatric cases reported); vaccine/IG PEP can prevent spread. (Daryo · CDC)
Hepatitis E (HEV, genotypes 1/2 endemic)	Low	Low	Common in regions with poor sanitation; mostly traveler-acquired; limited person-to-person spread. (CDC)
Tuberculosis incl. MDR/RR-TB	Low	Low (prolonged indoor exposure)	Central Asia carries substantial DR-TB burden; event risk is recognition/isolation rather than mass spread. (WHO · PLOS/Uzbek data)
Diphtheria (respiratory toxin-mediated disease)	Low	Low–Moderate (close contacts)	Sporadic regional resurgence; rapid antitoxin access is critical via CDC EA-IND. (CDC)

Typhoid/Paratyphoid (enteric fever)	Low–Moderate	Low	Food/water-borne; person-to-person uncommon; ensure diagnostic readiness and treatment. (CDC Yellow Book)
Brucellosis (zoonosis; *Brucella* spp.)	Low	Very low onward	Endemic rural exposures documented in Uzbekistan; lab exposures are key U.S. concern. (CDC · IJID/Uzbek study)
Crimean-Congo hemorrhagic fever (CCHF)	Low	Very low (healthcare exposure only)	Endemic foci exist in Central Asia; high-consequence VHF; nosocomial spread possible with blood exposure. (WHO · IJID review)

Houston context: Airborne/droplet threats (**measles**) and fecal-oral (**HAV**) are the mass-gathering priorities; **TB (incl. MDR)** and **diphtheria** are high-consequence rule-outs; **CCHF** is a rare but severe special-pathogen scenario. Aedes mosquitoes are established locally; maintain routine arbovirus readiness. (Harris County Public Health · Texas DSHS dengue 2024)

Priority conditions (clinical picture, infectiousness, risk rating, actions)

1) Measles

- **What/where:** Recent measles circulation with Uzbek immunization catch-ups noted; importations during mass travel are credible. (Gavi/WHO)
- **Presentation:** Fever → cough/coryza/conjunctivitis → maculopapular rash; Koplik spots; infectious from 4 days before to 4 days after rash.
- **Spread & Houston fit: Airborne (R_0 12–18)**; arenas/hotels/fan zones elevate risk—**High local potential** in undervaccinated pockets.
- **Risk to U.S. public: High consequence / Moderate likelihood** during mass gatherings.

- **Diagnostics & MCMs:** RT-PCR; **PEP windows—MMR ≤72 h** or **immune globulin (IG) ≤6 days**; do not co-administer. (CDC)

- **Messaging:**

    - **Providers/HCW:** Immediate **airborne isolation**, PCR, verify immune status, activate PEP cascade; follow CDC IPC. (CDC)

    - **EMS:** Mask febrile rash patients; capture travel/venue exposures.

    - **Public:** Verify **MMR** before events; if exposed, seek PEP guidance. (CDC)

2) Hepatitis A (HAV)

- **What/where: Large 2024 HAV surge** reported in Uzbekistan (≈9,500 pediatric cases early 2024). (Daryo)

- **Presentation:** Acute febrile hepatitis, jaundice, anorexia, nausea; can be severe in older adults or those with chronic liver disease.

- **Spread & Houston fit: Fecal-oral**; risk in congregate dining/food handling; **Moderate** local potential without prompt control.

- **Risk to U.S. public: Moderate consequence / Moderate likelihood** (importation + crowd dining).

- **Diagnostics & MCMs:** Anti-HAV IgM; **vaccine PEP for ≥12 months**; **IG for select groups** per ACIP; pre-exposure vaccine for travelers/food handlers as indicated. (CDC)

- **Messaging:**

    - **Providers/HCW:** Test compatible hepatitis; report rapidly; consider **PEP** for household/close contacts. (CDC)

    - **EMS:** Standard precautions.

    - **Public/food service:** Hand hygiene; exclude ill food handlers; consider vaccine if at risk.

3) Hepatitis E (HEV)

- **What/where:** Endemic in many LMICs; most U.S. cases are **travel-associated**. (CDC)
- **Presentation:** Acute hepatitis; severe disease in **pregnant** persons (third trimester) and immunosuppressed.
- **Spread & Houston fit:** Primarily **water/food-borne**; limited person-to-person → **Low** local potential.
- **Actions:** Clinical recognition in travelers (IgM/NAAT where available); supportive care.

4) Tuberculosis (incl. MDR/RR-TB)

- **What/where:** Central Asia reports substantial **drug-resistant TB** burden; Uzbekistan has documented high MDR proportions historically with ongoing DR-TB caseload. (WHO · PLOS/Uzbek data · BMC 2024)
- **Spread & Houston fit: Airborne**, typically requires prolonged indoor exposure; event-related risk is low; healthcare recognition/isolation is critical.
- **Actions:** Maintain airborne isolation, rapid NAAT and linkage to TB programs; alert to MDR risk and U.S. CDC/NTCA guidance. (CDC Yellow Book)

5) Diphtheria

- **What/where:** Europe/Central Asia have seen **sporadic resurgence** among undervaccinated groups; clinical suspicion must be maintained. Antitoxin is U.S. **EA-IND** only. (CDC)
- **Presentation:** Pharyngitis with **adherent gray pseudomembrane**, bull-neck, myocarditis/neuropathy from exotoxin.
- **Spread & Houston fit: Droplet** and close contact; **Low–Moderate** potential in close-contact clusters if unrecognized.
- **MCMs & messaging: Immediate DAT** + antibiotics (erythro/penicillin); contact management and vaccination updates. **Confirm access pathway to DAT** via state/CDC. (CDC)

6) Typhoid/Paratyphoid

- **What/where:** Travel-associated enteric fever; sporadic importations expected with large events. (CDC Yellow Book)

- **Presentation:** Prolonged fever, abdominal pain, headache; relative bradycardia; constipation/diarrhea; complications (GI bleed, perforation).

- **Spread & Houston fit: Fecal-oral**; onward spread is uncommon with modern sanitation—**Low** local potential.

- **Actions:** Blood cultures; susceptibility-guided therapy; counsel on hand hygiene and food safety.

7) Brucellosis

- **What/where:** Endemic zoonosis in rural Uzbekistan; human cases linked to livestock exposure; documented **Samarkand oblast risk factors**. (CDC · IJID/Uzbek study)

- **Presentation:** Undulating fever, sweats, arthralgia, hepatosplenomegaly; chronic/relapsing course.

- **Spread & Houston fit: Not efficiently spread person-to-person**; **Very low** community risk; key risks are **lab** exposures and imported unpasteurized products.

- **Actions:** Alert labs for BSL-3 practices; doxycycline + rifampin (or doxy + streptomycin) per CDC; reportable in Texas.

8) Crimean-Congo hemorrhagic fever (CCHF)

- **What/where: Tick-borne VHF** with high fatality; Central Asian foci include neighboring countries; Uzbekistan has reported **sporadic cases** historically. (WHO · IJID reviews,19)

- **Presentation:** High fever → hemorrhagic signs, shock; thrombocytopenia, transaminitis.

- **Spread & Houston fit:** Tick/livestock exposure abroad; **rare human-to-human** via blood/fluids—**Very low** local spread, primarily **healthcare-associated** if IPC fails.

- **Actions: Immediate special-pathogen precautions**, public-health notification; supportive care; **ribavirin** has suggestive benefit. (CDC CCHF)

Audience-specific messaging: (ready for consideration by actual SMEs (unlike me))

Providers (ED/Urgent Care/Primary Care)

- **Measles:** Ask about Central Asia/Europe travel and **airborne isolate immediately**; order **RT-PCR**; **PEP: MMR ≤72 h** or **IG ≤6 days** (do **not** co-administer). (CDC)
- **HAV:** Test jaundice/acute hepatitis (IgM); arrange **PEP** for close contacts per ACIP; consider vaccine for at-risk groups. (CDC)
- **HEV:** Consider in pregnant travelers with acute hepatitis; supportive care; notify public health if cluster.
- **TB (incl. MDR):** Airborne isolation for suspected pulmonary TB; rapid NAAT; notify TB program. (WHO)
- **Diphtheria:** If compatible pharyngitis with pseudomembrane, **do not delay DAT**; start antibiotics; coordinate contact prophylaxis and vaccination. (CDC)
- **Enteric fever:** Obtain cultures **before** antibiotics; tailor therapy; advise food-safety hygiene.

Health-care workers (IP&C, Lab, OB)

- Triage flag: "**Central Asia travel ≤30 days** + fever/rash/cough/jaundice/hemorrhagic signs."
- Rooms: **Airborne** (measles/TB); **droplet/contact** (diphtheria); standard + exposure controls (HAV/HEV).
- Lab: Measles PCR; HAV IgM; blood cultures/AST for typhoid; **Biosafety alerts** for *Brucella*; packaging/transport for special pathogens (CCHF).
- Pharmacy: Ensure **IG for measles/HAV**, macrolides, ceftriaxone, typhoid agents, and **DAT access** workflow; post exposure pathways posted. (CDC,5,9)

EMS / First responders

- Mask coughers or fever-with-rash; use droplet/airborne per dispatch; note **travel and venue** exposures.

- Standard precautions for jaundice/vomiting/diarrhea; avoid contact with blood/fluids if hemorrhagic features.

General public (fans, volunteers, hosts)

- Verify **MMR**; practice **hand hygiene** and **don't attend events if ill**; seek care for fever-rash or jaundice; avoid risky foods/water while traveling. (CDC,5)

Medical countermeasures to stage (flagging items not typically emphasized for Houston)

- **Measles PEP:** Rapid pathways to **MMR** and **immune globulin (IG)**—IG may be limited; pre-arrange procurement (DSHS/CDC). (CDC)
- **HAV:** Vaccine and **IG** for indicated PEP; coordinate supplies with pharmacies/DPH. (CDC)
- **Diphtheria: Diphtheria antitoxin (DAT)** via **CDC EA-IND**; ensure on-call protocol and after-hours contact tree. (CDC)
- **TB:** Airborne isolation capacity, rapid NAAT, MDR consult pathways.
- **Enteric fever:** Culture capacity and susceptibility-guided agents on formulary.
- **Special pathogens:** Access to **PPE** and transport protocols for suspect **CCHF**; awareness that **ribavirin** may be considered case-by-case. (CDC CCHF)

How each spreads & likelihood of continued transmission in Houston

- **Measles: Airborne**; highly infectious—**sustained local spread possible** in undervaccinated clusters during mass gatherings. (CDC)
- **HAV: Fecal-oral**; **moderate** potential via households/food handling without control; vaccine/IG can halt spread. (CDC)

- **HEV: Water/food-borne**; **low** local continuation given sanitation; monitor for traveler cases. (CDC)
- **TB (incl. MDR): Airborne**, requires prolonged exposure; **low event-related risk**; inpatient isolation prevents spread. (WHO)
- **Diphtheria: Droplet**; **low–moderate** cluster risk if under-recognized; DAT + antibiotics + vaccination breaks chains. (CDC)
- **Typhoid/Paratyphoid: Fecal-oral**; **low** onward spread; occasional household clusters possible. (CDC Yellow Book)
- **Brucellosis: Zoonotic**; **no typical person-to-person**; lab-safety emphasis. (CDC)
- **CCHF: Tick/livestock exposure** abroad; **very low** local spread, mainly **healthcare exposure** risk without IPC. (WHO)

Houston environmental notes (for vector teams & situational awareness)

- **Aedes mosquitoes** (aegypti/albopictus) are established; maintain routine arbovirus readiness (drain/cover messaging, MVC surge). (Harris County Public Health,21)
- **Texas documented local dengue transmission in 2024**—not Uzbekistan-linked, but signals **environmental plausibility** if viremic travelers arrive. (Texas DSHS · CIDRAP)

Summary:

- **Top watch-outs from Uzbekistan: Measles** and **Hepatitis A** for mass-gathering spread; **TB (incl. MDR)** and **Diphtheria** as high-consequence clinical rule-outs; **HEV**, **Typhoid**, **Brucellosis** traveler-associated; **CCHF** as rare special-pathogen. (Gavi/WHO · CDC)
- **PEP windows:** Measles **MMR ≤72 h / IG ≤6 days**; HAV **vaccine PEP for ≥12 months, IG for select groups**; Diphtheria **DAT ASAP**. (CDC,5,9)

- **Stockgaps to address now: Immune globulin** (measles/HAV); **DAT EA-IND** process readiness; TB isolation capacity. (CDC,5,9)

FIFA 2026 Epidemiology Brief — Cape Verde → Houston (HOU)

Bottom Line Up Front

Condition	Likely importation by fans	Local transmission potential in Houston	Why this matters
Dengue (Aedes-borne)	**Moderate**	**Moderate**	Cabo Verde experienced a large **2024–25 dengue epidemic**; Aedes vectors are established in Harris County. (Expresso das Ilhas)
Zika (Aedes-borne; pregnancy risk)	Low	Low–Moderate (seasonal)	Historic **2015–16 Zika outbreak** with microcephaly; Aedes present in Houston → vigilance for pregnancy counseling. (CDC Stacks)
Shigella sonnei (travel-associated; resistant)	**Moderate**	**Low–Moderate** (network-dependent)	**Recurrent multi-country outbreak** in travelers from Cape Verde; resistance markers (e.g., **dfrA1**). (ECDC)
Measles (rubeola)	**Moderate**	**High** in undervaccinated clusters	Airborne; CDC urges MMR for all international travelers; mass-gathering amplification possible. (CDC)
Hepatitis A	**Low–Moderate**	**Low–Moderate**	Fecal–oral; CDC recommends HepA vaccine for travelers; food-handler exposures can drive clusters. (CDC)
Leptospirosis (water exposure)	Low	None	Traveler import possible after freshwater/flood exposures; **no person-to-person spread**. (CDC)

Tuberculosis (incl. MDR/RR-TB)	Low	Low (prolonged indoor exposure)	Clinical recognition/isolation in healthcare settings remains the priority. (CDC)
Malaria (indigenous)	**None**	None	**WHO certified Cabo Verde malaria-free (Jan 2024)**; onward risk from CV travelers is nil. (The Global Fund)

Houston context: Focus on **Aedes-borne viruses (dengue, Zika)** and **fecal-oral/sexual network spread (Shigella)**; maintain airborne readiness for **measles**. Harris County runs integrated mosquito surveillance/control; Texas continues to detect **travel-associated dengue** with occasional local transmission in the state. (Harris County Public Health)

Priority conditions (clinical picture, infectiousness, risk rating, actions)

1) Dengue

- **What/where:** Large epidemic in Cabo Verde in 2024–25 (government and INSP dengue bulletins reported sustained transmission across multiple islands). (Expresso das Ilhas)
- **Presentation:** Febrile illness with myalgia/arthralgia, retro-orbital pain; warning signs day 3–7 (abdominal pain, vomiting, mucosal bleed); severe dengue possible (plasma leak/shock).
- **Spread & Houston fit: Aedes aegypti/albopictus**; arenas/fan-zones → day-biting exposure; **Moderate local potential** in warm months given local vectors. (Harris County Public Health)
- **Risk to U.S. public: Moderate consequence / Moderate likelihood** during mass gatherings; Texas documented travel-related dengue and sporadic local transmission in recent seasons. (Texas Health Services)
- **Diagnostics & MCMs:** RT-PCR/NS1 (first week) then IgM; supportive care, fluids, careful hemodynamics; **no U.S.-available vaccine for naive adult travelers**; avoid NSAIDs if dengue suspected.
- **Messaging:**

    - **Providers/HCW:** Test febrile travelers from CV; monitor Hct/platelets; avoid NSAIDs; counsel return precautions; notify public health.
    - **EMS:** Treat as viral febrile illness; emphasize hydration and bleeding risk handoff.
    - **Public:** Prevent bites (repellent, AC/screens); seek care for fever + severe headache or bleeding.

2) Zika (pregnancy-focused risk)

- **What/where:** Cabo Verde's **2015–16 Zika outbreak** (Asian lineage) included **~7,500 suspected cases** and **18 microcephaly cases**; no current large outbreak, but vector ecology persists. (CDC Stacks)
- **Presentation:** Often mild (fever, rash, arthralgia, conjunctivitis) or asymptomatic; congenital Zika syndrome risk if infected in pregnancy.
- **Spread & Houston fit: Aedes** + **sexual transmission**; **Low–Moderate** local potential given vectors and summer climate; primary concern is pregnancy exposure. (Harris County Public Health)
- **Risk to U.S. public: High consequence (pregnancy) / Low likelihood**.
- **Diagnostics & MCMs:** NAAT on serum/urine; no antiviral/vaccine; pregnancy counseling per CDC Zika guidance. (CDC)
- **Messaging:**
    - **Providers/HCW/OB:** Screen pregnancy status; test compatible illness; counsel on bite and sexual precautions. (CDC)
    - **Public:** Pregnant persons/partners should use repellents/condoms and consider itinerary risks.

3) Shigella sonnei (travel-associated; resistance signal)

- **What/where: Recurrent multi-country outbreak** in travelers returning from Cape Verde (Sal/Boa Vista resorts) continues in **2025**; outbreak strain with resistance marker **dfrA1** (trimethoprim). (ECDC)

- **Presentation:** Acute febrile diarrhea, abdominal cramps, tenesmus; can be severe in children/older adults or immunocompromised.

- **Spread & Houston fit: Fecal–oral**, including **sexual transmission**; **Low–Moderate local potential** (household/sexual networks), particularly post-travel.

- **Diagnostics & MCMs:** Stool culture with **AST**; avoid empiric azithro/cipro when XDR suspected; consider ceftriaxone/carbapenem only for severe disease per ID consult; strict hand hygiene; avoid antimotility agents.

- **Messaging:**

    - **Providers/HCW:** Ask about Cape Verde resort travel; **send culture/AST**; report clusters; provide sexual health counseling. (ECDC)

    - **Public:** Hand hygiene; do not swim with diarrhea; seek care for dysentery; safer-sex guidance during/after illness.

4) Measles

- **What/where:** Global resurgence; CDC urges MMR for all international travelers. (CDC)

- **Presentation:** Fever → cough/coryza/conjunctivitis → maculopapular rash; Koplik spots.

- **Spread & Houston fit: Airborne (R_0 12–18)**; **High** local potential in undervaccinated clusters and indoor venues.

- **Risk to U.S. public: High consequence / Moderate likelihood** for event-linked importations.

- **Diagnostics & MCMs:** RT-PCR; **PEP windows: MMR ≤72 h** or **immune globulin (IG) ≤6 days** (not co-administered).

- **Messaging:**

    - **Providers/HCW:** Immediate **airborne isolation**, PCR, immune status check, PEP cascade.

    - **Public:** Verify **MMR** before events; call for PEP if exposed.

5) Hepatitis A

- **What/where:** CDC recommends **HepA vaccination** for travel to Cape Verde. (CDC)
- **Presentation:** Fever, malaise, jaundice; often food-borne.
- **Spread & Houston fit: Fecal–oral**; **Low–Moderate** potential (food-handler exposures).
- **Diagnostics & MCMs:** HAV IgM; vaccine for pre-exposure; **PEP ≤14 days** (vaccine ± IG based on age/immune status).
- **Messaging:**
    - **Providers/HCW:** Consider HAV in jaundiced travelers; notify environmental health if food handler.
    - **Public:** Hand hygiene; avoid food prep when ill.

6) Leptospirosis (traveler import)

- **What/where:** Risk with freshwater exposure or flooding; listed by CDC for Cape Verde. (CDC)
- **Clinical:** Fever, myalgias, conjunctival suffusion; severe Weil's disease (hepato-renal) possible.
- **Houston fit: No onward spread**; rare person-to-person transmission.

7) Tuberculosis (incl. MDR/RR-TB)

- **What/where:** Endemic globally; travelers may present with symptoms later; CDC lists TB considerations for Cape Verde. (CDC)
- **Spread & Houston fit: Airborne**, usually requires prolonged exposure; event-related risk low; focus on healthcare recognition/isolation.
- **Actions:** Airborne isolation, NAAT, link to TB program.

8) Malaria (indigenous)

- **Status: None**—Cabo Verde is **WHO-certified malaria-free (Jan 2024)**; any malaria in visitors would be from travel elsewhere. (The Global Fund)

Audience-specific messaging (ready for consideration by actual SMEs (unlike me))

Providers (ED/Urgent Care/Primary Care)

- **Dengue/Zika:** Test febrile travelers from CV (RT-PCR/NS1 early); avoid NSAIDs if dengue possible; counsel pregnancy risks for Zika. (Insp.gov.cv)
- **Shigella:** Ask about **Sal/Boa Vista resort** stays; **send stool culture/AST**; anticipate resistance; avoid antimotility agents; report clusters. (ECDC)
- **Measles: Airborne isolate immediately**, PCR, implement **MMR/IG PEP** pathways. (CDC)
- **TB:** Maintain airborne isolation + NAAT; notify TB program. (CDC)

Health-care workers (IP&C, Lab, OB)

- Triage rule: "**CV travel ≤21–30 days** + fever/rash/diarrhea."
- Ensure airborne rooms (measles/TB), contact precautions for diarrheal illness; lab capacity for **measles PCR**, **dengue RT-PCR/NS1**, **stool culture with AST**.
- OB: reinforce Zika testing/counseling workflows. (CDC)

EMS / First responders

- Mask coughing or fever-with-rash patients; standard PPE for diarrheal illness; document **travel and venue** exposures; routine decon.

General public (fans, volunteers, hosts)

- Verify **MMR**; **HepA** recommended for travel; prevent mosquito bites; avoid food-handling when ill; seek care for **fever + severe headache/bleeding**, **dysentery**, or **fever-rash**. (CDC)

Medical countermeasures to stage (flagging items not typically emphasized for Houston)

- **Measles PEP:** Ensure rapid access to **MMR** and **immune globulin (IG)**; pre-arrange surge procurement.
- **Hepatitis A: HepA vaccine** and **IG** for post-exposure (≤14 days) in food-handler or high-risk settings. (CDC)
- **Shigella (resistant):** Reinforce **stool culture/AST** logistics and ID consult pathways; avoid routine empiric azithro/cipro for severe dysentery without AST. (ECDC)
- **Dengue/Zika:** Diagnostics (RT-PCR/NS1) and IV fluid/critical-care capacity; no specific antivirals/vaccines for naive travelers.
- **Vector control:** Coordinate with **Harris County MVC** for targeted response if human arboviral cases detected. (Harris County Public Health)

How each spreads & likelihood of continued transmission in Houston

- **Dengue: Aedes-borne**; **moderate** potential for limited local transmission if viremic travelers arrive during mosquito season; emphasize source reduction and case-triggered vector ops. (Harris County Public Health)
- **Zika: Aedes-borne** and **sexual**; **low–moderate** potential; primary concern is congenital risk. (CDC)
- **Shigella: Fecal–oral/sexual**; **network-dependent** clusters possible; hygiene and rapid diagnosis limit spread. (ECDC)
- **Measles: Airborne**; **high** spread potential in undervaccinated clusters and indoor venues. (CDC)
- **Hepatitis A: Fecal–oral**; **low–moderate**; preventable via vaccination and food-safety measures. (CDC)

- **Leptospirosis: Environmental** (freshwater/animal urine); **no ongoing person-to-person** transmission in Houston. (CDC)

- **TB: Airborne** with prolonged exposure; **low event-related** risk, healthcare isolation mitigates. (CDC)

- **Malaria (indigenous in CV): None**—not a source from CV travelers. (The Global Fund)

Houston environmental notes (for vector teams & situational awareness)

- **Aedes mosquitoes** are established; MVC conducts integrated surveillance/control and event-triggered spraying. (Harris County Public Health)

- **Texas has documented local dengue transmission (2024)**—not directly CV-linked, but demonstrates environmental plausibility if viremic travelers arrive. (Texas Health Services)

Summary:

- **Top watch-outs from Cape Verde: Dengue**, **Zika (pregnancy counseling)**, **travel-associated Shigella (resistant signal)**; plus **Measles** readiness; **TB** as a clinical rule-out. (Insp.gov.cv)

- **PEP windows:** Measles **MMR ≤72 h / IG ≤6 days**; **HepA PEP ≤14 days**; Shigella → **culture/AST** and ID-guided therapy. (CDC)

- **Stockgaps to address now: Immune globulin** (measles & HepA PEP), robust **stool culture/AST** workflows; dengue diagnostics and fluid/critical-care surge. (CDC)

FIFA 2026 Epidemiology Brief — Saudi Arabia → Houston (HOU)

Bottom Line Up Front:

Condition	Likely importation by fans	Local transmission potential in Houston	Why this matters
MERS-CoV (Middle East Respiratory Syndrome)	Low	**Low–Moderate** (healthcare settings)	Ongoing sporadic KSA cases from dromedary exposure; healthcare clusters have occurred; high-consequence pneumonia. (وزارة الصحة السعودية)
Dengue (DENV)	Moderate	**Moderate** (Aedes present)	Endemic in western KSA (Jeddah/Makkah/Madinah); viremia in travelers could seed local Aedes transmission in summer. (World Health Organization)
Measles (rubeola)	**Moderate**	**High** in undervaccinated clusters	Resurgent measles risk for any international travel; airborne, highly contagious; ensure rapid PEP windows. (CDC)
Invasive meningococcal disease (IMD)	Low	Low–Moderate (close contacts)	High consequence; KSA mandates **MenACWY** for Hajj/Umrah—many travelers from KSA are vaccinated; still a rule-out in ED. (وزارة الصحة السعودية)
Hepatitis A	Low–Moderate	Low–Moderate	Travel-associated fecal–oral infection; vaccine & IG effective for PEP. (CDC)

Crimean-Congo hemorrhagic fever (CCHF)	Low	**Very low** (except blood/aerosol in HC)	Endemic in Middle East; tick/livestock exposure–related; nosocomial spread possible—HCID preparedness issue. (World Health Organization)
Alkhurma hemorrhagic fever virus (AHFV)	Low	**None** (no casual spread)	Tick-borne flavivirus discovered in KSA; rare but severe; traveler recognition, lab safety. (CDC)
Tuberculosis (incl. MDR)	Low	Low (prolonged indoor exposure)	Persistent global importation risk; primarily a healthcare recognition/isolation issue at events. (PMC)

Houston context: *Aedes aegypti/albopictus* are established locally; Texas documented **local dengue in 2024**, indicating environmental plausibility for amplification if viremic travelers arrive. (PMC)

Priority conditions (clinical picture, infectiousness, risk rating, actions)

1) MERS-CoV

- **What/where:** Camel-associated coronavirus with ongoing sporadic cases in KSA; periodic healthcare clusters; high case-fatality in severe disease. (وزارة الصحة السعودية)
- **Presentation:** Fever, cough, SOB → pneumonia/ARDS; GI symptoms possible. Incubation ~2–14 days. (CDC)
- **Spread & Houston fit:** Droplet/short-range aerosol + contact in healthcare; household spread; **mass-gathering risk is importation**, with potential **facility-based** transmission if not promptly isolated.
- **Risk to U.S. public: High consequence / Low likelihood** (elevated only if healthcare IPC lapses).
- **Diagnostics & MCMs:** rRT-PCR on lower-respiratory specimens preferred; **no specific antiviral approved**—supportive care; strict **airborne + contact + eye protection**. Notify

public health/special pathogens network for testing. (CDC)

- **Messaging:**
    - **Providers/HCW:** Ask about travel from Arabian Peninsula, **isolate immediately**, test per CDC PUI guidance; avoid aerosol-generating procedures without full PPE. (CDC)
    - **EMS:** Source control (mask if tolerated); alert receiving facility when respiratory illness + recent KSA travel.
    - **Public:** If ill after travel, call ahead before seeking care; avoid camel contact/unpasteurized camel milk when abroad.

2) Dengue (DENV-1–4)

- **What/where: Endemic in western KSA** (Jeddah/Makkah/Madinah) with recurring activity; DENV-2 documented. (World Health Organization)
- **Presentation:** Febrile illness with myalgias, retro-orbital pain; warning signs days 3–7 (abdominal pain, persistent vomiting, mucosal bleed).
- **Spread & Houston fit: Aedes** mosquitoes; **imported viremia** can seed local cycles in warm months; arenas/fan-zones raise bite risk outdoors.
- **Risk to U.S. public: Moderate consequence / Moderate likelihood** (seasonal).
- **Diagnostics & MCMs:** NS1/RT-PCR early; IgM later. **No NSAIDs**; judicious fluids; anticipate hematologic monitoring. Vaccines: **Dengvaxia (US)** limited to seropositive 9–16 y/o—not for general travelers; **Qdenga** not US-approved. Vector control activation if suspect local transmission.
- **Messaging:**
    - **Providers/HCW:** Test early; report immediately if suspected locally acquired case; counsel on acetaminophen-only analgesia.
    - **EMS:** Hydration assessment; avoid aspirin/NSAIDs advice.
    - **Public:** Bite prevention (repellent, long sleeves), seek care for red-flag symptoms.

- **Houston ops:** Coordinate with **Harris County MVC** for trap/spray if triggers met. (PMC)

3) Measles

- **What/where:** Airborne viral exanthem with high transmissibility; **international travel remains the top importation driver**; ensure vaccination/PEP readiness. (CDC)
- **Presentation:** Fever → cough/coryza/conjunctivitis → maculopapular rash; Koplik spots; infectious −4 to +4 days from rash.
- **Spread & Houston fit: Airborne (R_0 12–18)**; **High** local potential in undervaccinated clusters and crowded venues.
- **Risk to U.S. public: High consequence / Moderate likelihood** during mass gatherings.
- **Diagnostics & MCMs:** RT-PCR; **PEP: MMR ≤72 h** or **IG ≤6 days** (do not co-administer). (CDC)
- **Messaging:**
  - **Providers/HCW: Airborne isolation now**, test, activate PEP cascade; verify staff immunity.
  - **EMS:** Mask febrile rash patients; relay travel/venue exposures.
  - **Public:** Verify **MMR** before events; call health dept if exposed.

4) Invasive meningococcal disease (IMD)

- **What/where:** Fulminant meningitis/sepsis; **KSA requires MenACWY** for Hajj/Umrah, reducing exportation risk; imported cases noted among pilgrims in 2024–25. (وزارة الصحة السعودية)
- **Presentation:** Fever, petechiae/purpura, meningismus, shock.
- **Spread & Houston fit: Droplet** among close contacts; dorms/households/hostels.
- **Actions:** Treat immediately (ceftriaxone/cefotaxime); **PEP for close contacts** (rifampin/ciprofloxacin/ceftriaxone). Rapid contact tracing.

5) Hepatitis A

- **What/where:** Fecal–oral; travel-associated; vaccine-preventable. (CDC)
- **Presentation:** Fever, malaise, N/V, jaundice; anicteric in children.
- **Spread & Houston fit:** Food-handler exposures possible; local spread mitigated by sanitation and vaccination.
- **Actions:** Post-exposure **vaccine and/or IG** per CDC; counsel food handlers/volunteers. (CDC)

6) Crimean-Congo hemorrhagic fever (CCHF)

- **What/where:** Tick-/livestock-borne nairovirus **endemic in the Middle East**; nosocomial outbreaks described; KSA has historical presence. (World Health Organization)
- **Presentation:** Sudden fever, myalgias → hemorrhage/shock; CFR up to 10–40%. (World Health Organization)
- **Spread & Houston fit: No vector transmission locally** anticipated; **healthcare exposure** risk if unrecognized.
- **Actions:** Strict barrier precautions; lab biosafety (BSL-3 handling for suspect specimens). **Ribavirin** sometimes used (consult CDC/experts); not routinely stocked. (WOAH)

7) Alkhurma hemorrhagic fever virus (AHFV)

- **What/where:** Tick-borne flavivirus discovered in KSA; rare but severe; animal/tick exposure risk. (CDC)
- **Presentation:** Acute fever → hemorrhagic signs; reported fatalities.
- **Spread & Houston fit: Not person-to-person**; no onward transmission in Houston; clinical recognition/lab safety only.
- **Actions:** Supportive care; public messaging on **avoiding unpasteurized camel milk/animal exposure** when abroad.

8) Tuberculosis (incl. MDR)

- **What/where:** Persistent global TB with KSA burden managed via national program; travelers can import latent/active disease. (PMC)

- **Spread & Houston fit: Airborne**, typically requires prolonged exposure; event-related risk low; **healthcare isolation** prevents spread.

- **Actions:** Rapid NAAT, airborne isolation, link to TB program.

Audience-specific messaging (ready for consideration by actual SMEs (unlike me))

Providers (ED/Urgent Care/Primary Care)

- **MERS:** Respiratory illness + **Arabian Peninsula travel → isolate (airborne & contact w/ eye protection)** and test; notify public health immediately. (CDC)

- **Dengue:** Test (NS1/PCR) in febrile travelers; **avoid NSAIDs**; report suspect local cases promptly for vector response.

- **Measles: Airborne isolate immediately**; order RT-PCR; **PEP: MMR ≤72 h / IG ≤6 days**; do **not** co-administer. (CDC)

- **IMD: Do not delay ceftriaxone**; initiate **PEP** for close contacts.

- **CCHF/AHFV:** If hemorrhagic fever suspected, apply **enhanced PPE**; consult special pathogens; discuss **ribavirin** access for CCHF with experts. (World Health Organization)

Health-care workers (IP&C, Lab, OB)

- Triage flag: "**KSA travel ≤14–21 days** + fever/respiratory or hemorrhagic signs."

- Ensure negative-pressure capacity (measles, TB, MERS); droplet/contact workflows for IMD/dengue; biosafety precautions for VHF rule-outs. (CDC)

- Maintain JYNNEOS/TPOXX pathways for mpox if needed for other networks; not a KSA-specific signal at present.

EMS / First responders

- Mask coughing patients; report **travel/venue** exposures; standard decon.
- Cover bleeding or rash; use eye/face protection for hemorrhagic signs.

General public (fans, volunteers, hosts)

- Verify **MMR**; practice **bite prevention** outdoors; **do not travel** or attend events if febrile/ill; seek care for fever with rash or severe cough. (CDC)

Medical countermeasures to stage (flagging items not typically emphasized for Houston)

- **Measles PEP: MMR** and **immune globulin (IG)** with rapid deploy protocols; pre-arrange IG procurement. (CDC)
- **IMD: Rifampin, ciprofloxacin, ceftriaxone** for close-contact PEP <24 h; maintain ED ceftriaxone immediate-dose readiness.
- **Dengue:** Supportive care supplies (IV fluids, hematology monitoring); vector-control surge kits with **Harris County MVC**. (PMC)
- **CCHF: Ribavirin (IV/oral) access plan** via pharmacy cache or regional partners; train on **VHF PPE** donning/doffing and specimen shipping. (WOAH)
- **MERS/TB:** Airborne isolation rooms; N95/PAPR stock; rRT-PCR access and special-pathogens consult pathways. (CDC)

How each spreads & likelihood of continued transmission in Houston

- **MERS-CoV:** Droplet/short-range aerosol & contact; **low community spread**, **facility-based** risk if IPC gaps. (CDC)
- **Dengue: Aedes** vector; **moderate** seasonal potential given local vectors and recent Texas local transmission. (PMC)

- **Measles: Airborne**; **high** potential in undervaccinated pockets. (CDC)
- **IMD: Droplet** among close contacts; **low** baseline but **high consequence**—rapid PEP breaks chains.
- **Hepatitis A: Fecal–oral**; **low–moderate** local potential; controlled with vaccine/IG and hygiene. (CDC)
- **CCHF/AHFV: No vector-borne continuation** locally; **healthcare exposure** risk only if unrecognized; otherwise **none**. (World Health Organization)
- **TB: Airborne** but prolonged exposure required; **low** event-related risk; healthcare isolation limits spread. (PMC)

Houston environmental notes (for vector teams & situational awareness)

- **Aedes mosquitoes** are established; maintain routine arbovirus readiness (trap density, complaint response, community **drain/cover** messaging). (PMC)
- **Texas (2024) local dengue** confirms environmental plausibility for amplification if viremic spectators arrive during mosquito season. (PMC)

Summary:

- **Top watch-outs from Saudi Arabia: MERS-CoV (healthcare-focused)**, **Dengue (vector seasonality)**, **Measles (airborne resurgence)**; plus **IMD** (high consequence) and **CCHF/AHFV** (HCID recognition). (وزارة الصحة السعودية)
- **PEP windows:** Measles **MMR ≤72 h / IG ≤6 days**; IMD close-contact **PEP <24 h**; Hep A vaccine/IG per exposure risk. (CDC)
- **Stockgaps to address now: Immune globulin** for measles PEP; **ribavirin access plan** for CCHF (expert-guided); airborne isolation capacity/N95s for **MERS/TB**. (WOAH)

FIFA 2026 HCID/Hazard Summary — Houston (HOU)
Cross-country ranking (encounter likelihood and overall risk to Houston)

Disease / threat	Countries listing this (of 7)	Likelihood to be encountered (1 = highest)	Overall risk rank (1 = highest)	Why (Houston fit & driver)
Measles	7	1	1	Airborne, R_0 12–18; mass indoor mixing; undervaccinated clusters enable spread and outbreaks.
Dengue	4	2	2	Aedes aegypti/albopictus established locally; multiple source countries (Caribbean, Madeira, KSA); plausible limited local transmission and long-term establishment risk.
Pertussis	2	8	5	EU surges; waning adult immunity; household/roommate clusters; high consequence for infants.
Mpox (clade IIb/Ib)	3	6	7	Close/sexual contact; network-dependent; controllable with targeted outreach (JYNNEOS).

Invasive meningococcal disease (IMD)	4	9	4	Low baseline incidence but fulminant; crowded social settings; rapid PEP required.
Hepatitis A	3	7	6	Fecal–oral; food-handler/household clusters; vaccine/IG PEP effective but time-limited.
Tuberculosis (incl. MDR/RR-TB)	6	6	8	Airborne but prolonged exposure typically required; clinical isolation/NAAT readiness is key.
Shigella sonnei (incl. XDR in MSM networks)	4	5	9	Fecal–oral/sexual; post-travel and network clusters; resistance complicates therapy.
Chikungunya	1	10	11	Aedes-borne; import from Caribbean with disabling arthralgia; limited local amplification possible.
Zika	2	12	12	Aedes + sexual transmission; primary risk is pregnancy; focused counseling/testing needed.

MERS-CoV	1	15	13	Healthcare-amplified severe pneumonia; low community risk if IPC holds.
Crimean-Congo hemorrhagic fever (CCHF)	3	16	14	HCID; tick/livestock exposure abroad; healthcare exposure risk if unrecognized.
Diphtheria	1	17	15	Droplet; rare but serious; DAT access via CDC; cluster risk if under-recognized.
Typhoid/Paratyphoid	2	14	16	Fecal–oral; onward spread uncommon with sanitation; traveler-associated.
Hepatitis E	1	19	17	Water/food-borne; severe in pregnancy; limited person-to-person.
Leptospirosis	2	13	18	Environmental exposure abroad; no practical onward community spread.
Tick-borne encephalitis (TBE)	2	18	19	Traveler-only; no local tick cycle; clinical vigilance only.

Puumala hantavirus	1	21	20	Traveler-only; no person-to-person; supportive care.
Mediterranean spotted fever	1	22	21	Traveler-only rickettsiosis; not person-to-person; treat with doxycycline.
Alkhurma hemorrhagic fever virus (AHFV)	1	20	22	Rare HCID from KSA; no onward transmission in Houston; lab/IPC awareness.
Brucellosis	1	23	23	Zoonotic; lab safety and imported unpasteurized products are main U.S. risks.

Notes:
"Likelihood" reflects expected encounter frequency among fans/visitors plus historic activity in source countries.
"Overall risk" blends: encounter likelihood + onward transmission potential in Houston + clinical/public-health consequence + cross-country signal + long-term entrenchment potential.

Why there is no Rank 3 (and why it matters)

The overall ranking deliberately skips "3" because there is a **large step-change** between:

- **Tier 1–2:** Measles (Rank 1) and Dengue (Rank 2)
- **Tier 3–5:** All other hazards (Ranks 4–23)

In the semi-quantitative framework, each disease was scored on:

- **L** = encounter likelihood
- **T** = local transmission potential in Houston
- **C** = consequence/severity
- **X** = cross-country signal (how many briefs flag it, and at what level)
- **E** = long-term entrenchment potential (especially vector / environmental fit)

Conceptually:

Composite score ≈ L + T + C + X + E (ordinal 1–5 style components)

Illustrative comparison: Dengue (#2) vs IMD (#4)

Using approximate ordinal scores that reflect the briefs:

Dimension	Dengue (Rank 2)	Rationale (Dengue)	IMD (Rank 4)	Rationale (IMD)
L	4	Multiple source regions; several briefs list import as Moderate	2	Low import likelihood in each brief
T	3	Aedes established; seasonal local transmission plausible	2	Droplet; requires close contacts; PEP rapidly breaks chains
C	3	Severe/critical cases, ICU use, no broadly useful vaccine	5	Rapidly fatal sepsis/meningitis; very high individual severity

X	3	Present in 4 of 7 countries	2	Appears in several briefs but not universally
E	2	Realistic potential for long-term environmental entrenchment	0	No environmental persistence; event-limited

Approximate composites:

- **Dengue:** 4 + 3 + 3 + 3 + 2 = **15**
- **IMD:** 2 + 2 + 5 + 2 + 0 = **11**

Dengue's composite score is therefore **~25–30% higher** than IMD's, driven by:

- Higher **encounter likelihood** (L)
- Higher **local transmission potential** (T) in Houston (vectors present)
- Higher **cross-country signal** (X)
- Critically, non-zero **entrenchment potential** (E)

Measles sits **above both** (highest L, highest T, high C, high X, and non-zero E for repeated outbreaks), creating:

- **Tier 1:** Measles (Rank 1) – clearly highest composite
- **Tier 2:** Dengue (Rank 2) – second, but well above the rest
- **Tier 3+:** Mpox, IMD, TB, Hep A, Shigella, etc. – clustered mid-range (no single hazard clearly "deserves" Rank 3)

To avoid overstating precision, Rank "3" is intentionally left empty to signal that **no other disease approaches measles or dengue in overall risk** for Houston in the World Cup 2026 context.

Hazard-by-hazard: short-term vs. long-term impacts

(ordered by overall risk rank)

Measles

- **Short term (event weeks):**
  Rapid multi-venue exposures (arenas, hotels, fan zones) with potential for superspreading in undervaccinated clusters; high staff absenteeism for isolation/PEP operations; strain on IG/MMR supply and contact tracing.

- **Long term (years):**
  Seeded outbreaks in local undervaccinated communities; recurring school/childcare exclusions; sustained demand for IG/MMR surge plans and airborne isolation capacity.

Dengue

- **Short term:**
  Imported febrile illnesses; risk of severe dengue around defervescence; vector ops surges near index residences/venues; blood-product and ICU usage spikes in severe cases; NSAID-avoidance messaging load.

- **Long term:**
  If repeatedly seeded during mosquito season, plausible entrenchment of low-level autochthonous dengue in Greater Houston corridors; seasonal healthcare burden (outpatient + occasional ICU), standing vector-control budget increases, and persistent public messaging each summer.

Invasive meningococcal disease (IMD)

- **Short term:**
  Rare but catastrophic meningitis/sepsis; ED critical care demand; rapid (<24 h) PEP campaigns for close contacts across hotels/households; high media sensitivity.

- **Long term:**
  Minimal ongoing community transmission, but durable need for “instant-deploy” PEP protocols and inventory (rifampin/ciprofloxacin/ceftriaxone) and recurrent staff training.

Pertussis

- **Short term:**
  Household/dorm clusters; infant exposures prompting post-exposure macrolides and cocooning; clinic/ED testing volume increases.

- **Long term:**
  Elevated baseline coughing-illness awareness; OB/infant prophylaxis workflows kept hot; possible localized cycles if vaccination gaps persist.

Hepatitis A

- **Short term:**
  Food-handler investigations; targeted PEP (vaccine ± IG) for close contacts/venues; environmental health inspections and communications workload.

- **Long term:**
  Expanded HepA vaccination in food-service and at-risk groups; periodic post-travel clusters continue to trigger time-sensitive PEP and media attention.

Mpox (clade IIb/Ib)

- **Short term:**
  Network-bound cases; outpatient lesion NAAT demand; JYNNEOS access and targeted risk communications; occasional isolation and work exclusions.

- **Long term:**
  Low-level endemicity within specific networks; maintain vaccination and EA-IND TPOXX pathways plus clinician familiarity.

Tuberculosis (incl. MDR/RR-TB)

- **Short term:**
  Sporadic detections; airborne isolation and NAAT/culture workload; public-health

follow-up for close contacts.

- **Long term:**
  Ongoing case management including drug-resistant regimens; sustained need for inpatient negative-pressure capacity and linkage to TB program.

Shigella sonnei (incl. XDR)

- **Short term:**
  Post-travel or network clusters; ED visits for dysentery; stool culture/AST volumes rise; antimicrobial stewardship challenges.

- **Long term:**
  Intermittent resistant-strain introductions necessitating continued culture-first diagnostics, sexual-health counseling, and updated empiric guidance.

Chikungunya

- **Short term:**
  Febrile illness with severe polyarthralgia; concurrent dengue rule-out; vector control on any suspect locally acquired case.

- **Long term:**
  Chronic joint morbidity burden in a subset of cases; seasonal vigilance for possible limited local transmission if repeatedly seeded.

Zika

- **Short term:**
  Pregnancy-focused testing and counseling; joint OB–public-health case management; sexual-transmission precautions.

- **Long term:**
  Persistent congenital-risk counseling capacity; summer advisories tied to Aedes season; low-frequency but high-consequence events.

MERS-CoV

- **Short term:**
  PUI isolations in ED/ICU; rRT-PCR and special-pathogens consultation; healthcare staffing impacts from enhanced PPE requirements.

- **Long term:**
  Maintain readiness drills and airborne isolation stock; low community risk if IPC remains robust.

CCHF (HCID)

- **Short term:**
  Rare rule-outs with enhanced PPE, lab routing, and potential ribavirin consultation; high operational friction if a PUI appears.

- **Long term:**
  Sustain special-pathogens transport/specimen shipping readiness; ensure VHF PPE training remains current.

Diphtheria

- **Short term:**
  Rapid DAT access through CDC EA-IND; antibiotic therapy; contact management and vaccination updates.

- **Long term:**
  Keep DAT access tree/live; periodic clinician refreshers to avoid diagnostic delay.

Typhoid/Paratyphoid

- **Short term:**
  Traveler febrile illness; culture and susceptibility-guided therapy; environmental health

engagement if food handler.

- **Long term:**
  Low onward risk; maintain clinician awareness and lab capacity.

Hepatitis E

- **Short term:**
  Traveler hepatitis, severe risk in pregnancy; supportive care; OB consultation.

- **Long term:**
  Low onward risk; retain diagnostic awareness.

Leptospirosis

- **Short term:**
  Severe sepsis/Weil's disease rule-outs post freshwater/flood exposure abroad; IV penicillin/ceftriaxone familiarity.

- **Long term:**
  None locally (no person-to-person); maintain diagnostic literacy.

TBE (traveler-only)

- **Short term:**
  Post-tick exposure neurologic illness; supportive care; no onward spread.

- **Long term:**
  None locally.

Puumala hantavirus (traveler-only)

- **Short term:**
  HFRS-like illness; supportive care; no onward spread.

- **Long term:**
  None locally.

Mediterranean spotted fever (traveler-only)

- **Short term:**
  Fever/rash/tache noire; doxycycline response; no onward spread.

- **Long term:**
  None locally.

AHFV (HCID, KSA)

- **Short term:**
  Rare hemorrhagic fever rule-out in traveler; enhanced IPC/lab safety.

- **Long term:**
  Awareness only; no local transmission ecology.

Brucellosis

- **Short term:**
  Undulating fever; lab biosafety alerts; combination therapy.

- **Long term:**
  Low community risk; maintain lab-safety and import-food advisories.

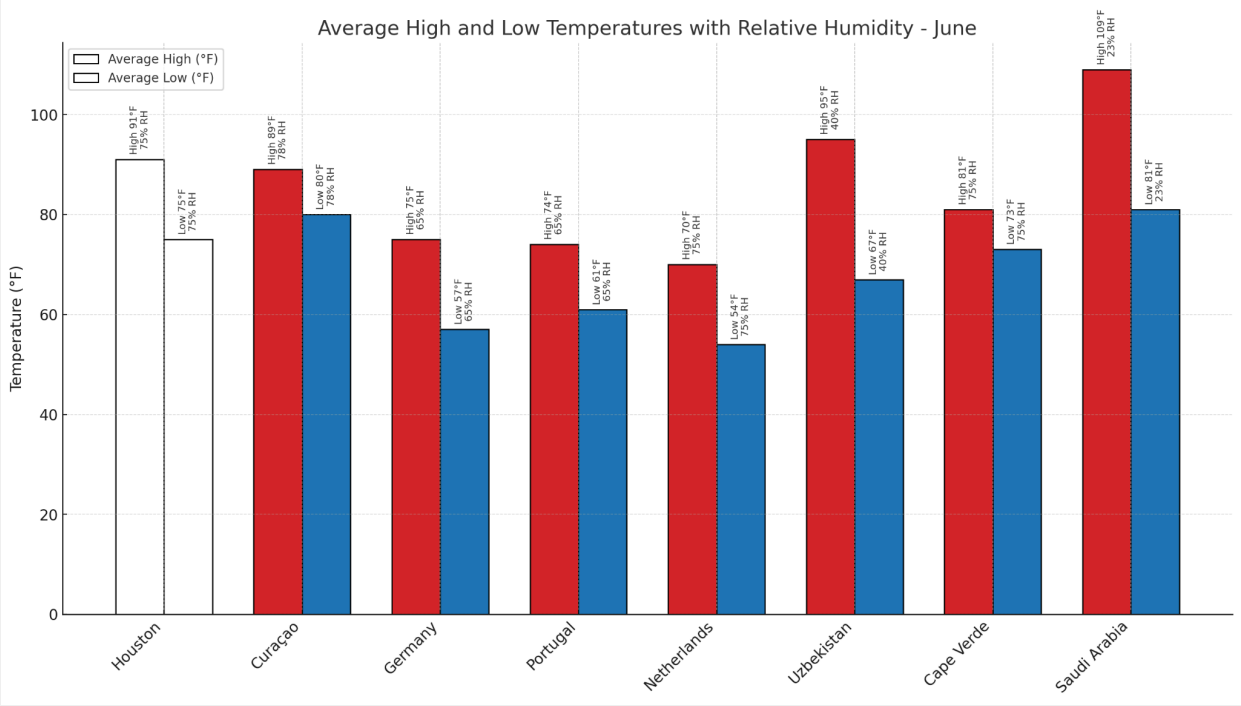
Planning takeaways (my summary thoughts)

- **Top hazards to exercise now:**
  Measles (airborne/PEP), Dengue (vector + clinical), IMD (24-h PEP cascade), Pertussis (infant protection), HepA (PEP ≤14 days), Mpox (JYNNEOS access).

- **Stock/flows most likely to bottleneck:**
  Immune globulin (measles/HepA), measles PCR capacity, dengue NS1/NAAT, ceftriaxone and rifampin/ciprofloxacin for IMD PEP, macrolides for pertussis PEP, stool culture/AST for Shigella.

- **Structural long-term risk:**
  Dengue is the only threat with credible environmental entrenchment potential in Houston (Aedes present). Recurrent seeding could make dengue a seasonal local reality post-2026.

- **HCID posture:**
  Keep special-pathogens (CCHF/MERS/AHFV) pathways hot: rapid isolation, specimen routing, PPE proficiency, and expert consult trees; do not over-stock antivirals—prioritize protocols and training.



Summary:

- Fans from northern Europe (Germany, Netherlands, Portugal) are coming from mid-70s to low-70s June highs into low-90s, very humid Houston — a jump of ~15–20°F plus **much higher dew points** for that temperature range. They will be the most vulnerable to heat stress, dehydration, and performance issues when outdoors for matches, fan zones, and transit.

- Fans from Curaçao, Cape Verde, and Tashkent are used to warm–hot but generally drier or breezier conditions; Houston's combination of heat + humidity will still feel heavier, especially during mid-day with high heat index.

- Fans from Riyadh are accustomed to extreme **dry** heat, but Houston's lower temperature + much higher moisture will produce comparable or worse heat index despite a lower thermometer reading.

For public messaging:

- Emphasize that "Houston in June feels hotter than the thermometer looks" due to humidity and overnight heat retention.

- Tie this into concrete protective messaging: hydration, shade, acclimatization days, cooling zones, and warnings about leaving children or vulnerable adults in cars or

unventilated spaces.