

Swine Origin H1N1 Pandemic Influenza 2009

Experience in an urban pediatric teaching hospital

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Pandemic (H1N1) 2009 influenza - Summary of key epidemiologic findings in the US*

- Distribution of cases/hospitalizations/deaths
 - Highest incidence lab confirmed infections in school age children
 - Highest hospitalization rates among 0 through 4 year olds
- Distribution of cases by age group is markedly different compared to seasonal influenza
 - Higher proportion of hospitalized cases in children and young adults
 - Few cases in older adults
 - No outbreaks among elderly in long term care facilities
 - 477 deaths in the United States, including 36 deaths among children aged <18 years
- 70% of hospitalized cases have an underlying medical condition that confers higher risk for complications
- Pregnancy is a higher risk condition

*ACIP Influenza Workgroup Considerations. ACIP Meeting, July 29, 2009.

Infection Control

Initial Infection Control Actions

- Unknown virulence
- Unknown routes of transmission
- Unknown susceptibility to antivirals
- Initial epidemiologic links to Mexico and California were used in screening protocols
- Invoked “Emerging Infectious Disease” (EID) protocols [SARS policy]

Emerging Infectious Disease (EID) Isolation: definition for staff?

- Patients with fever at least 100.4°F and other signs & symptoms compatible with ILI *and* risk factors
- Severe unexplained respiratory illness

Emerging Infectious Disease Isolation: suspect or confirmed; instructions to staff

- Negative pressure isolation room, if available. Otherwise, a single room is acceptable. Door must be closed.
- Post EID isolation sign
- HCW use gowns, gloves, N95 (duckbill) masks, and goggles when entering room, as well as a hospital-approved disinfectant to clean surface areas.
- Remove PPE before leaving room.

Emerging Infectious Disease Isolation Continued

- Patient to wear *surgical mask* when outside room, leaving room only for medically essential tests/procedures.
- Patients should practice *hand* and respiratory hygiene, including use of tissues and proper disposal of them.

Isolation Signage

To Enter:
(Para Entrar:)

Use: **Airborne,
Contact &
Droplet
Precautions**

Degerm hands,
Put on Gloves



Wear cloth or
disposable gown



Use
N-95
(duck
bill)
mask
and
negative
pressure
room



Wear eye
protection



Infection Control Procedures as the pandemic progressed

- Initial information about virulence in Mexico not borne out in US
- Highly contagious
- Low-moderate degree of illness

- Relaxed EID precautions and used Droplet precautions. Expanded precautions for high-risk procedures (intubation, extubation, bronchoscopy, suctioning)

Droplet Isolation

Visitors / Visitantes

- Report to Nurses' Station for instructions before entering room.

Antes de entrar a la habitación deben reportarse a la estación de enfermeras para recibir instrucciones.



**Fluid Shield Mask
with Visor**



**Hand Hygiene upon
entering & leaving room**

Droplet Precautions

- Considerable historical data that influenza is not an airborne disease
- Specific data supports same for H1N1
- Droplets are in the air for 3-5 feet and then fall to the ground
- Surgical masks with eye protection are protective
- Curtains/ other dividers stop droplet spread

Hand and Respiratory Hygiene for Patients (Signage at every portal to hospital)

Stop the spread of germs that make you and others sick!

Cover your Cough



You may be asked to put on a surgical mask to protect others.

Clean your Hands

after coughing or sneezing.



Wash with soap and water

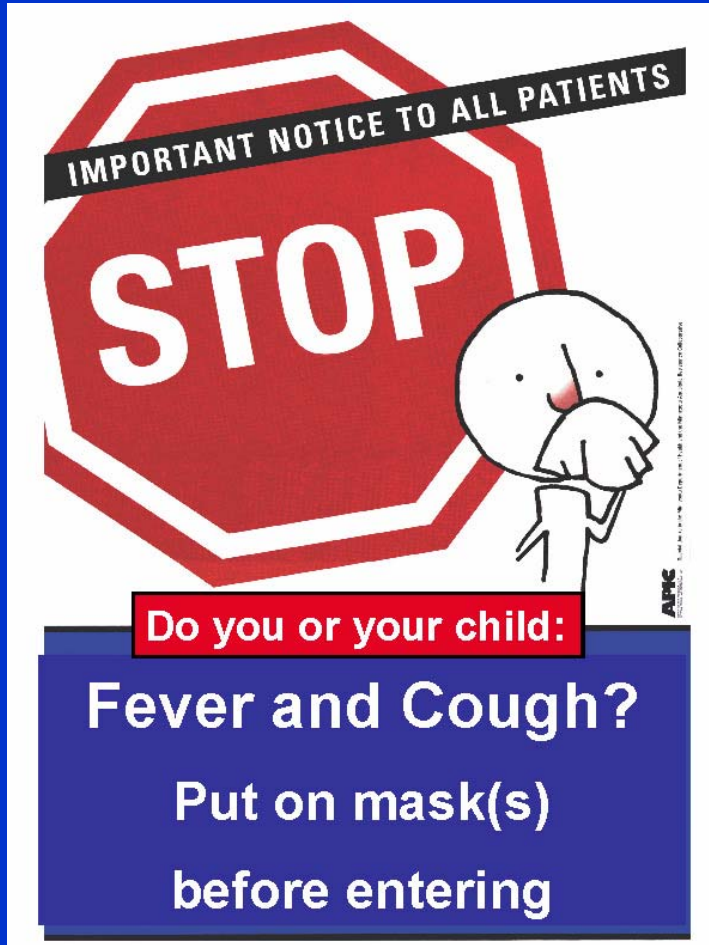
or clean with alcohol-based hand cleaner.



- **Hand Hygiene:** alcohol based hand sanitizer or soap and water
- **Respiratory Hygiene:** Cover your cough with tissues; dispose of tissues in trash can; pt wears surgical mask

Ambulatory Areas

(ED, Procedure Areas, Practices)



- Symptomatic patients should be masked before entering an ambulatory area.
- Post prominent, multi-language signs at entrances to the practice and in the waiting areas.
- If patient has symptoms, s/he dons a surgical mask before entering waiting room.

Visitors with Signs and Symptoms of ILI



- Ill visitors are asked not to visit. Signs are posted at all hospital entry points.
- Case by case basis in pediatric areas and other situations

Emergency Department

ED Influenza-Like Illness (ILI) Algorithm

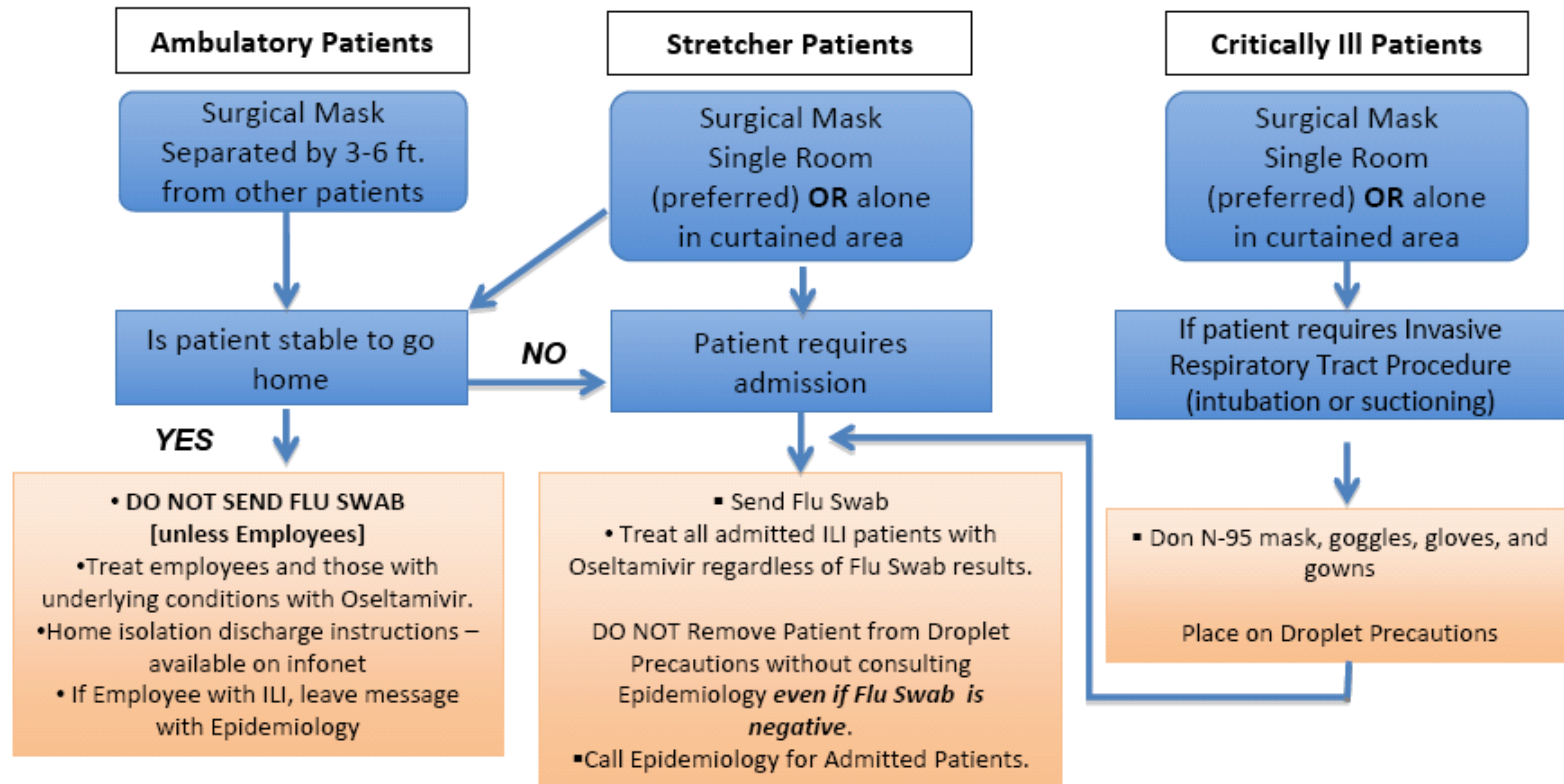
Patient Presenting with Acute Febrile Respiratory Illness

Influenza A H1N1/Influenza-like Illness (ILI) symptoms may include:

Fever* **OR** Reported Fever (>100.4 F/38C), cough or sore throat. **Not all patients with Influenza A (H1N1) have fever and some patients may have GI symptoms*

Influenza may also present as: Pneumonia, ARDS, or Respiratory Distress

Triage Nurse: Please indicate "ILI", "Droplet Precaution" on front of chart – Patients should have face mask placed on them and be placed in Droplet Precautions (See Below)



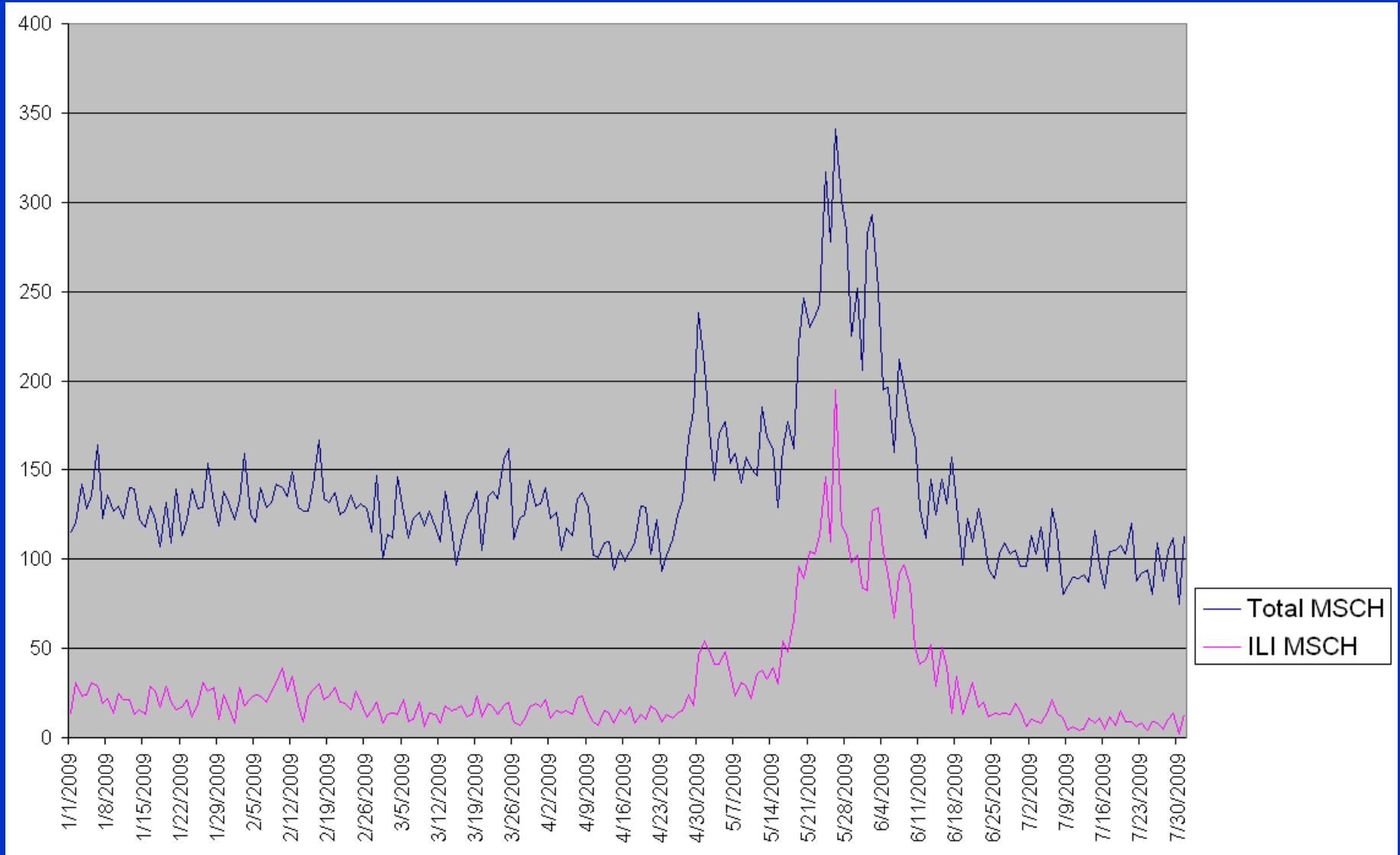
DROPLET PRECAUTIONS: Single Room (preferred) OR in curtained area. Place DROPLET isolation sign on door. Providers wear surgical mask with face shield or surgical mask and goggles for basic care. If contact with respiratory secretions anticipated, staff needs to ALSO don gloves and gown. Patients with ILI should all wear surgical mask at all times while in the ED setting.

Surge to Pediatric ED

Facilities and flow

- Individual media events and public concern caused up to three-fold surge in patient volume in PED
- Unable to provide care in standard clinical environment – expansion to non-standard, non-clinical area
- Epidemiology created a dedicated pager for all isolation, exposure, and treatment questions
- Significant increase in inpatients with ILI on isolation awaiting negative testing which delayed admissions and transfers out of ICUs

Pediatric ED Visits

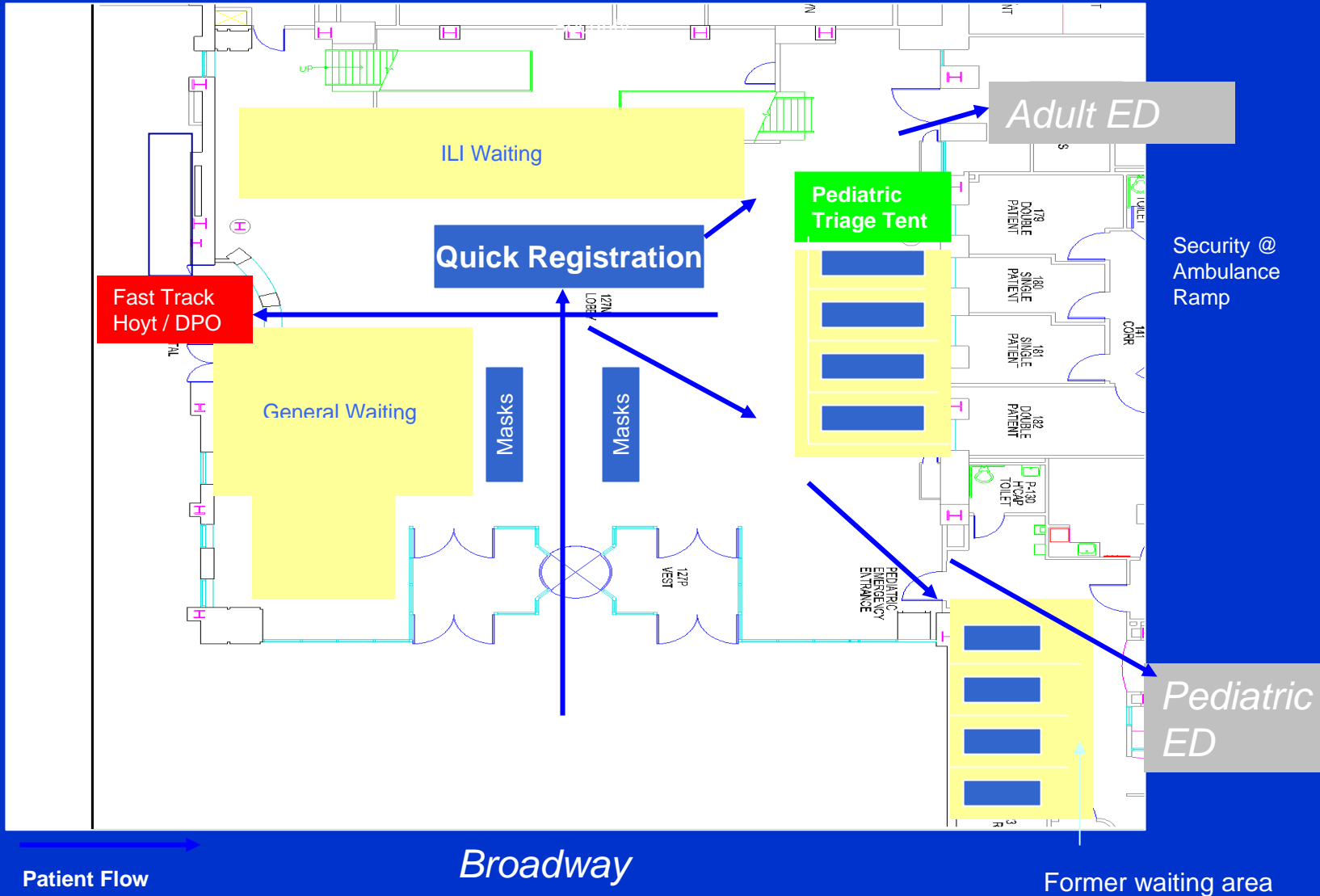


Surge to Pediatric ED - Personnel

- Staffing was radically increased
- Overtime for PED staff
- Augmentation by residents and fellows (paid) – but limited by RRC and program constraints
- General Pediatrics attendings were required to do 2 shifts a week in the PED

Contingency Plan for Energy Court (Pediatric Surge)

MSCHONY North Corridor



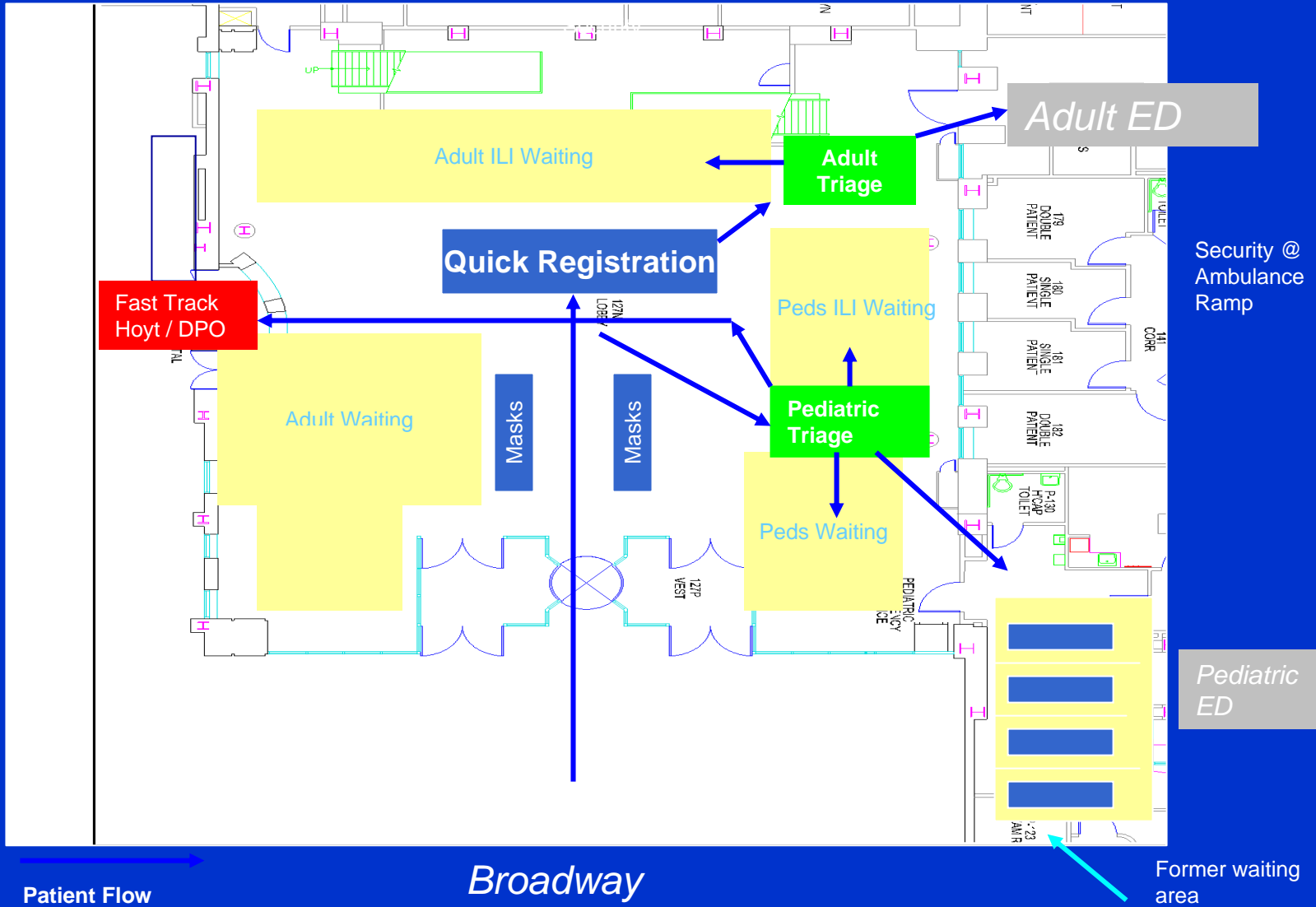
Patient Flow

Broadway

Former waiting area

Contingency Plan for Energy Court (Adult and Pediatric Surge)

MSCHONY North Corridor







Admitted Patients

NYP/Pediatric hospitalized patient experience

- **Patients:** Hospitalized children \leq 18 years of age admitted from May 3rd -July 31st, 2009 with one or more laboratory tests positive for influenza A.
- When compared with the same period in 2008:
 - The pediatric EDs experienced an excess of 3,750 visits of which 27.7% were for documented ILI.
 - NLP may not have identified all
 - Only 2.5% of children with ILI were hospitalized
 - Infants < 2 years old with ILI were more likely to be hospitalized than older children.
 - Of the 115 hospitalized case subjects (median age 3.9 years), 91 (79%) had underlying conditions.

NYP/Pediatric hospitalized patient experience

- The NYC Department of Health tested specimens from 54 (47%) cases and all were confirmed as H1N1 (SO).
- Bacterial super-infection occurred in 4 (3.5%) children and one (0.9%) child died.
- Thirty-five (30%) of the 115 children were hospitalized in pediatric intensive care; 15, 9, and 11 had presentations consistent with mild disease, bronchiolitis, or pneumonia, respectively.
 - In the latter group, all required mechanical ventilation, including 3 who required high frequency oscillatory ventilation.
- **Conclusions:** The first wave of the influenza A H1N1 (SO) pandemic was associated with low rates of hospitalization for ILI, bacterial super-infections, and mortality, although 10% of hospitalized children had severe influenza with respiratory failure.

Healthcare Worker Illness

Staff Issues

- Considerable issues both with staff working sick and some with staff calling in sick when they were not
 - Current HR policies discourage use of sick time
- Staff were instructed that they had an ILI and needed evaluation if they had a fever of at least 100.4°F *plus* cough or sore throat

Instructions given to Staff Who Got Sick at Home

- Follow standard method of calling in sick
- Also call Workforce Health and Safety (WH&S) for evaluation. If swine flu is possible, then:
 - Call (WH&S) twice daily to report temperature & symptoms
- Must be cleared by WH&S before returning to work

Instructions given Staff Who Got Sick At Work

- If you are **SICK**, inform your supervisor
- Go to WH&S or ED (nights, weekends) but call first. If a staff member goes to the ED, s/he must call WH&S the next business day
- Call WH&S daily to report temperature & symptoms
- Must be cleared by WH&S before returning to work

Staff illness

- MSCH had 18 cases of laboratory confirmed H1N1 in healthcare workers
 - The vast majority of HCW's with ILI were not tested
- The average increase in sick hours in all NYP employees was 10.5%
- ED healthcare workers in the NYP network had a 14.3% increase in sick hours
 - MSCH ED healthcare workers had a **81.4% increase** in sick hours from 2008
- WH&S workers had a 42.8% increase in sick hours

Challenges

Challenges – Emergency Department

- Multiple external agencies giving different advice
 - Advance communication to staff that “Epidemiology Update” is the ONLY source of information to be used
- Staffing plans and illness for a prolonged pandemic
 - Better integration with outpatient providers
 - “Push the patients rather than pull the doctors”
 - Consideration being given to outside volunteer professionals
 - MRC, SurvNY, other

Challenges - Clinical Microbiology

- VOLUME of testing
- Inaccuracy of EIA
- Training gaps in molecular technology
 - Retraining, cross-training, expanding hours
- Data analysis in real-time needed
- Equipment & reagents/kits for molecular tests for rapid detection of pandemic flu
 - Hoping for in-house typing for cohorting inpatients

Challenges – Incident Command

- Consider how “Chronic Incident Command” structure should look for a prolonged incident
 - Initial notification and Command center activation
 - “one person Command Center”
 - Daily calls

Questions?
Discussion