

# COORDINATING PEDIATRIC MEDICAL CARE DURING AN INFLUENZA PANDEMIC

HOSPITAL WORKBOOK

The Oak Ridge Institute for Science and Education (ORISE) is a U.S. Department of Energy (DOE) institute focusing on scientific initiatives to research health risks from occupational hazards, assess environmental cleanup, respond to radiation medical emergencies, support national security and emergency preparedness, and educate the next generation of scientists.

This report was prepared for the Centers for Disease Control and Prevention (CDC) by ORISE through an interagency agreement with DOE. ORISE is managed by Oak Ridge Associated Universities (ORAU) under DOE contract number DE-AC05-06OR23100.

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

# COORDINATING PEDIATRIC MEDICAL CARE DURING AN INFLUENZA PANDEMIC

## HOSPITAL WORKBOOK

Prepared for:

Centers for Disease Control and Prevention > Division of Healthcare Quality Promotion > Healthcare Preparedness Activity

Prepared by:

Oak Ridge Institute for Science and Education

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## TABLE OF CONTENTS

<b>Background</b> .....	1
<b>Purpose</b> .....	1
<b>How to Use this Workbook</b> .....	1
<b>Disclaimer</b> .....	2
Children's Hospital Focus .....	3
<b>Target Audience</b> .....	3
<b>Overview</b> .....	3
<b>Area 1 – Pediatric Medical Liaisons Between Children’s Hospitals and General Hospitals</b> ..	4
<b>Area 2 – Internal Surge Capacity Assessment</b> .....	10
<b>Area 3 – Pandemic Influenza Alternate Staffing Model</b> .....	18
<b>Area 4 – Coordination with the Community Pandemic Influenza Response</b> .....	24
<b>Area 5 – Patient- and Family-Centered Care (PFCC) During a Pandemic Influenza Surge</b> ..	30
<b>Area 6 – Pandemic Influenza Pediatric Triage</b> .....	34
General Hospital Focus .....	37
<b>Target Audience</b> .....	37
<b>Overview</b> .....	37
<b>Area 1 – Pediatric Medical Liaisons and Other Key Contacts</b> .....	38
<b>Area 2 – Internal Pediatric Care Capabilities Assessment</b> .....	44
<b>Area 3 – Coordination with the Community Pandemic Influenza Response</b> .....	56
<b>Area 4 – Patient- and Family-Centered Care (PFCC) During a Pandemic Influenza Surge</b> ..	62
<b>Area 5 – Pandemic Influenza Pediatric Triage</b> .....	66
Appendix A: Acronyms.....	1
Appendix B: Acknowledgments.....	1
Appendix C: References .....	1

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## **BACKGROUND**

In September, 2009, the Centers for Disease Control and Prevention's (CDC's) Division of Healthcare Quality Promotion (DHQP) convened a Pediatric Healthcare Response to Pandemic H1N1 Influenza Stakeholder Meeting in Atlanta, Georgia. Participants in the meeting divided into working groups to address pediatric related topics and issues. One group was tasked with identifying and prioritizing hospital issues related to pediatric care during the 2009 H1N1 influenza pandemic. The efforts of this group serve as the basis for this document.

This workbook is intended to assist hospitals with coordinating medical care for pediatric influenza-like illness (ILI) across their community. Although many of the suggestions were based on experiences with the 2009 H1N1 pandemic, this tool can be adapted for use during pandemic spread of a novel influenza virus. This tool is presented in two sections, identified by type of hospital focus: Children's Hospital Focus and General Hospital Focus.

Users of the workbook may find it helpful if their community hospitals are able to access accurate and real-time data on the number of pandemic influenza cases in its community and the severity of illness in these cases. Prior to using this workbook, it would be beneficial for the users—hospital and community planners—to determine the best way to collect and disseminate these data.

## **PURPOSE**

The purpose of this workbook is to assist hospitals in the process of coordinating pediatric influenza-like illness (ILI) medical care across a community during an influenza pandemic.

## **HOW TO USE THIS WORKBOOK**

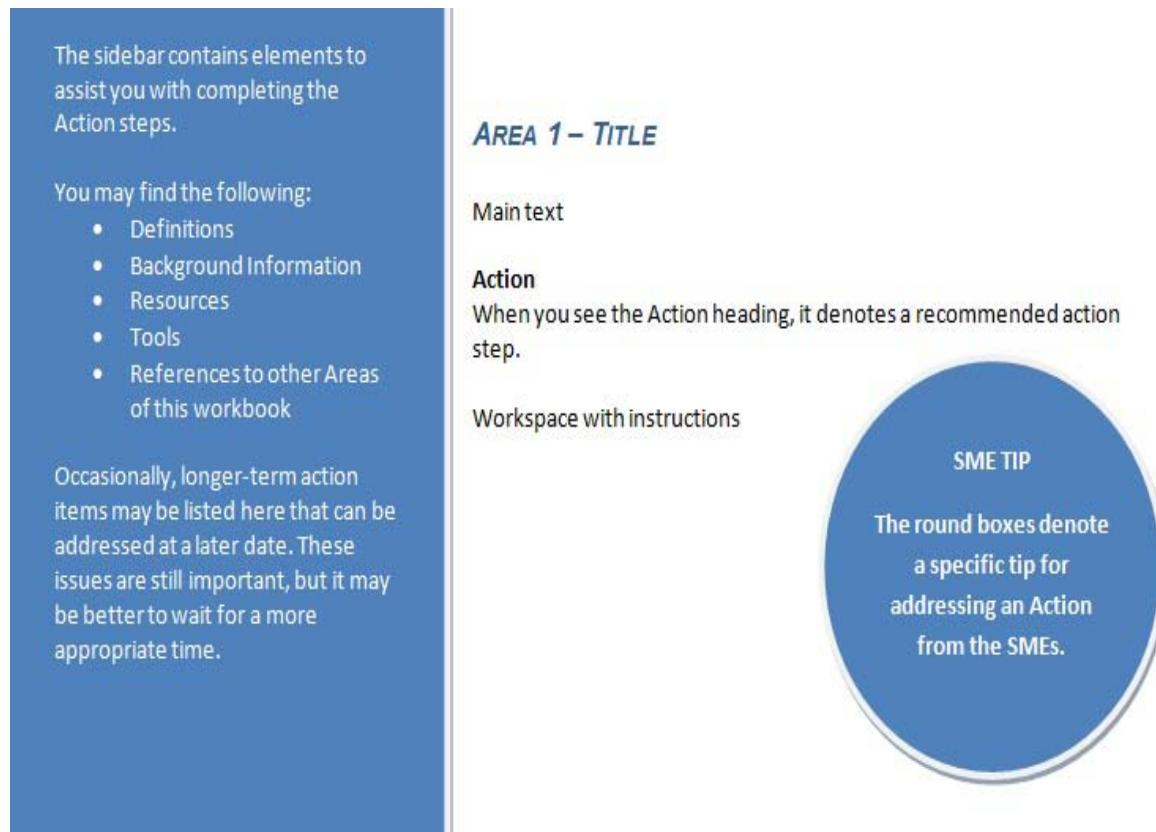
Throughout this workbook, you will be asked to identify and input information regarding your hospital's internal capacity to respond to a pediatric patient surge during an influenza pandemic. You also will be asked to integrate your hospital's influenza pandemic response into the external planning efforts of your community if this has not been done already.

This workbook is not intended to replace your hospital's previous planning efforts. Instead, it builds on those efforts. The utility of this workbook comes from using existing information to assist in coordinating pediatric ILI medical care across a community.

There are two parts to this workbook: Part A – Children's Hospitals and Part B – General Hospitals. To get started, select the appropriate part for your facility and gather your hospital's pandemic influenza and/or disaster response plans.

Both Parts A and B are broken down into focus areas. Part A – Children's Hospitals has six focus areas and Part B – General Hospitals has five focus areas. Each focus area provides action steps for you to take as well as tips from subject matter experts (SMEs) for addressing the action.

Each focus area also provides colored side bars that contain supplemental information, such as SME suggested resources, to assist you. The following diagram illustrates the layout of the workbook pages.



## DISCLAIMER

This workbook is a compilation of suggestions and planning steps discussed by subject matter experts at the Pediatric Healthcare Response to Pandemic H1N1 Influenza Stakeholder Meeting. The resources cited in the workbook have been used by the SMEs in their own disaster planning processes prior to the meeting and therefore, are included as examples or suggestions for other hospitals. The inclusion of resources in this workbook does not imply that they have been endorsed by CDC, the SMEs, or their organizations. This workbook is also not intended to serve as a comprehensive listing of all available disaster planning resources. There may be other helpful documents available from many organizations and agencies.

## CHILDREN'S HOSPITAL WORKBOOK

### CHILDREN'S HOSPITAL FOCUS

#### **TARGET AUDIENCE**

Children's Hospitals

#### **OVERVIEW**

Subject matter experts (SMEs) identified six areas that should be addressed by children's hospitals when coordinating medical care for pediatric influenza-like illness (ILI) across a community.

- Area 1 Pediatric Medical Liaisons Between Children's Hospitals and General Hospitals
- Area 2 Internal Surge Capacity Assessment
- Area 3 Pandemic influenza alternate staffing model
- Area 4 Coordination with the Community Pandemic Influenza Response
- Area 5 Patient- and Family-Centered Care During a Pandemic Influenza Surge
- Area 6 Pandemic Influenza Pediatric Triage

## **AREA 1 – PEDIATRIC MEDICAL LIAISONS BETWEEN CHILDREN’S HOSPITALS AND GENERAL HOSPITALS**

### **Pediatric medical liaison**

A person selected to represent a specific hospital when coordinating pediatric ILI medical care with other hospitals in the community

### **Non-routine pediatric provider**

A provider who does not regularly see children (e.g., an internist)

Improving communication between hospitals in a community will improve the coordination of pediatric ILI medical care. If relationships with other hospitals outside of typical jurisdictions and referral patterns have not been established, developing these relationships should be a priority. You can achieve this by defining the role of a pediatric medical liaison for your hospital and selecting the appropriate person to fill this role. The primary role of the pediatric medical liaison is to develop relationships with other hospitals. Other roles and responsibilities of the pediatric medical liaison are to:

- Develop new relationships with other hospitals
- Maintain existing relationships with other hospitals
- Communicate with internal hospital staff to facilitate continuity of care for pediatric patients with ILI
- Provide clinical expertise in pediatric care to non-routine pediatric providers, if possible. If not, develop a relationship with a physician who can provide pediatric expertise
- Assist in completing the identified areas in this workbook
- Review this workbook with hospital administrators and other key hospital decision-makers

### **SME TIP**

It is recommended that a pediatric medical liaison for children’s hospitals be a pediatrician, preferably with a background in pediatric emergency medicine.

**ACTION**

- Identify an appropriate pediatric medical liaison for your hospital and record their information below.

---

**Name:****Title:****Phone:****Fax:****E-mail:**

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**ACTION**

- Identify pediatric medical liaisons for each hospital in your community and record their information in the space provided.

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**Hospital Name:****Liaison Name:****Title:****Address:****Phone:****Fax:****E-mail:**

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**Hospital Name:****Liaison Name:****Title:****Address:****Phone:****Fax:****E-mail:**

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**Hospital Name:**

**Liaison Name:**

**Title:**

**Address:**

**Phone:**

**Fax:**

**E-mail:**

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**Hospital Name:**

**Liaison Name:**

**Title:**

**Address:**

**Phone:**

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**E-mail:**

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In addition to communicating with other hospitals, it is important for the pediatric medical liaison to establish relationships with other healthcare and supporting sectors that participate in the community-wide influenza pandemic response.

#### **Action**

- Identify primary points of contact for community agencies in other healthcare delivery and pandemic response sectors, including public health departments, emergency management agencies, and specialized pediatric medical care providers.

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**Sector:** **Public Health Department**

**Agency:**

**Name:**

**Title:**

**Address:**

**Phone:**

**Fax:**

**E-mail:**

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**Sector:** Public Health Department

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## ACTIONS

- Identify and record gaps in your hospital's current planning efforts related to Area 1 – Pediatric Medical Liaisons and Other Key Contacts.

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- Describe any additional duties of the pediatric medical liaison that are specific to your facility.

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## AREA 2 – INTERNAL SURGE CAPACITY ASSESSMENT

### Surge Capacity

A healthcare system's ability to manage a sudden or rapidly progressive influx of patients within the currently available resources at a given point in time

### Capabilities and Services Inventory

If you are unsure of the surge capacity of your community's healthcare system, consider working with your local hospital association to conduct a capabilities and services inventory with other hospitals.

#### Possible Inventory Data Categories

- Ancillary services
- Beds by type (typical and surge capacity)
- Morgue capacity
- Negative pressure rooms
- Pediatric ventilators and adult ventilators with a converter
- Personal protective equipment
- Space and beds used in elective procedures that can be converted
- Transport capacity

### Tools

#### *FluSurge 2.0*

A spreadsheet-based model that provides hospital administrators and public health officials with estimates of the surge in demand for hospital-based services during the next influenza pandemic

Centers for Disease Control and Prevention (CDC)

<http://www.cdc.gov/flu/tools/flusurge/>

The ability of a hospital to provide care during an influenza pandemic is not focused only on bed availability but also on acquiring adequate medical staff, treatment spaces, medical equipment, and the supplies that are needed for patient care.

Address surge capacity by assessing the following resources for your hospital:

- Staffing (see Area 3 – Coaching and Staffing Models)
- Physical space
- Equipment, supplies, and medications
- Pediatric transport capability

The most effective way to complete this assessment is to refer to your existing pandemic influenza and/or disaster response plan. It also will be beneficial to utilize any previous pandemic surge modeling that you have completed using software such as FluSurge 2.0 (see sidebar) to determine your hospital's ability to respond to a pediatric ILI patient surge.

### STAFFING

See Area 3 – Coaching and Staffing Models for more detail and information about just-in-time (JIT) training for staff.

### PHYSICAL SPACE

A plan to maximize available space for treatment areas will assist in expanding your surge capacity.

### ACTIONS

- ▶ Identify how various hospital units can be organized, reorganized, or combined to allow for increased patient capacity.
- ▶ Determine which units can be closed (e.g., surgical or diagnostic suites) and reopened as other types of units to increase your hospital's capability to address patient surge.

An example of an incremental bed space expansion plan is shown on the next page. Consider how your facility may be able to expand its bed capacity during a surge scenario. Enter that information in the space provided.

Priority	Bed Location	Examples/Comments
1	Unoccupied, staffed beds	Wards, ED
2	Set-up, unstaffed beds	Closed wards
3	Early transfer and discharge of patients	Medical safety permitting, possible transfer to an alternate observation facility if opened
4	Conversion of private rooms to semi-private, use of alternate locations with access to oxygen and suction	Recovery room/PACU, cardiac catheterization lab, endoscopy suites, ultrasound rooms  Cohort infected patients
5	Other spaces without oxygen and suction	Rehabilitation gyms, cafeteria, physical therapy units, etc., as practical

Using the sample above, describe your facility's steps for surge capacity expansion.

Priority	Bed Location	Examples/Comments
1		
2		
3		
4		
5		

## Resources

*Children in Disasters: Hospital Guidelines for Pediatric Preparedness*  
 Centers for Bioterrorism Preparedness Program Pediatric Task Force  
<http://www.nyc.gov/html/doh/downloads/pdf/bhpp/hepp-peds-childrenindisasters-010709.pdf>

Recommendations for Increasing NYC Pediatric Critical Care Surge Capacity  
 DRAFT September 2009

**Appendix C** SURGE CAPACITY EXPANSION TOOL (sample Sheet of Children's Hospital)

**BED AVAILABILITY and ISOLATION ROOMS in TRADITIONAL CLINICAL AREAS**

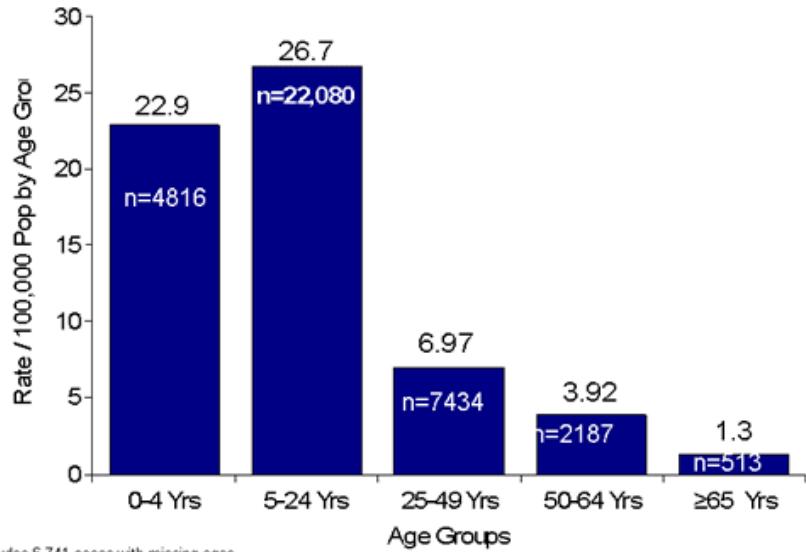
Area & Room	Isolation Y/N - UV & bag Present	*Isolat ability Status	Additional # of beds per room	**Additional Required Equipment	# of Available Halway beds	Maximum # of possible beds per room	Comments
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## ACTION

- With your community partners, discuss creating flexible influenza pandemic plans.

For example, consider how plans may need to change based on the ages of persons most impacted by illness during a pandemic. Additionally, consider adjustments needed if the ages of impacted persons change over time.

During the 2009 H1N1 influenza pandemic, the highest attack rates were observed among the 0-4 and 5-24 years old age groups. If community pediatric hospitals became overburdened, general hospitals could consider providing care to older adolescents and/or young adults in order to preserve pediatric hospital capacity for younger children. However, the age group that general hospitals might need to care for could continue to decrease if the number of young patients continued to surge at pediatric hospitals.



\*Excludes 6,741 cases with missing ages.  
Rate / 100,000 by Single Year Age Groups: Denominator source: 2008 Census Estimates, U.S. Census Bureau at:  
<http://www.census.gov/popest/national/asrh/files/NC-EST2007-ALLDATA-R-File24.csv>

**Graph A: Novel H1N1 Confirmed and Probable Case Rate in the United States, By Age Group**  
Available at: <http://www.cdc.gov/H1N1FLU/surveillanceqa.htm>

Community planners and pediatric medical liaisons should also consider discussing

- Who would be responsible for making decisions on where care should be delivered
- What resources are required to support such a decision,
- What factors would “trigger” the decision.

Record information gained from these discussions in the following section.

Other strategies could include:

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Describe the next steps your facility needs to take to improve its ability to expand surge capacity.

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## Resource

*Recommendations for Use of Antiviral Medications for the Management of Influenza in Children and Adolescent for the 2009–2010 Season—Pediatric Supplement for Healthcare Providers*  
Centers for Disease Control and Prevention (CDC)  
[http://www.cdc.gov/h1n1flu/recommendations\\_pediatric\\_supplement.htm](http://www.cdc.gov/h1n1flu/recommendations_pediatric_supplement.htm)

## EQUIPMENT, SUPPLIES, AND MEDICATIONS

Using data from the modeling exercises mentioned at the beginning of this area, identify the discrepancies between your facility's inventory and what might be needed for pediatric patients during an influenza pandemic surge scenario.

### ACTION

► Identify additional pediatric medical equipment that is available to your hospital to provide pediatric care to a larger than normal patient population. Be sure to consider medications, supplies, and instruments and equipment.

When identifying surge capacity, remember to consider

- Unoccupied beds
- Gurneys and stretchers
- Licensed beds
- Open spaces adequate for care and for which staffing and equipment could be arranged

If you are able to acquire adult beds to augment your inpatient capacity, these beds should have side rails, be set at the lowest possible height, and be unplugged so the buttons to adjust the beds do not work.

### ACTION

► Contact supply vendors to determine reliability of continued supply deliveries.

## PEDIATRIC TRANSPORT CAPABILITY

Interfacility transport of children is a critical component of a successful coordinated community response to an influenza pandemic. Your community must determine the parameters that will guide pediatric transport.

### ACTION

► Coordinate with all entities that could provide pediatric patient transport both to the hospital (in routine and emergency cases) and from the hospital upon transfer or discharge to expedite bed availability for other pediatric cases.

Meet with other pediatric medical liaisons and community influenza pandemic planning committees to decide which facilities in your community will care for the sickest children. It will be important to include Emergency Medical Services representatives and others from the transportation sector in these discussions and planning efforts. Record that information here.

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What are the criteria agreed upon by your community to transport pediatric cases to this facility?

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What resources are available to your hospital to aid in this transport?

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#### SME TIP

During your planning, use the American Academy of Pediatric's revised and expanded edition of the *Air and Ground Transport of Neonatal and Pediatric Patients* which is listed in the sidebar.

#### Resource

*Air and Ground Transport of Neonatal and Pediatric Patients, 3<sup>rd</sup> Edition*  
American Academy of Pediatrics (AAP)  
[https://www.nfaap.org/netFORUM/eweb/DynamicPage.aspx?webcode=aapbks\\_productdetail&key=fa657e6e-d1ad-4c6b-aeca-bfb35b421baa](https://www.nfaap.org/netFORUM/eweb/DynamicPage.aspx?webcode=aapbks_productdetail&key=fa657e6e-d1ad-4c6b-aeca-bfb35b421baa)

## ACTIONS

- Identify and record gaps in your hospital's current planning efforts related to Area 2 – Assess for Internal Surge Capacity.

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- Describe the next steps your facility needs to take to improve its internal capabilities to care for pediatric patients during an influenza pandemic surge.

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- Describe the long-term steps your facility needs to take to improve internal surge capacity.

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## ACTIONS

- Describe potential issues related to maximizing physical space that you encountered during planning.

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- Describe potential issues related to equipment, supplies or medication that you encountered during planning.

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- Describe potential issues related to pediatric transport that you encountered during planning.

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## AREA 3 – PANDEMIC INFLUENZA ALTERNATE STAFFING MODEL

### Resource

*Definitive Care for the Critically Ill During a Disaster: Medical Resources for Surge Capacity*  
American College of Chest Physicians, Task Force for Mass Critical Care  
[http://chestjournal.chestpubs.org/content/133/5\\_suppl/32S.full.pdf](http://chestjournal.chestpubs.org/content/133/5_suppl/32S.full.pdf)

### Principles for Staffing Models

1. Patient care assignments for caregivers should be managed by the most experienced clinician available.
2. Assignments should be based on staff abilities and experience.
3. Delegation of duties that usually lie outside the scope of workers' normal duties may be necessary and appropriate under surge conditions.
4. Systematic efforts to reduce care variability, procedure complications, and errors of omission must be used when possible.

Coaching and staffing models should address the identification of lead staff members and just-in-time (JIT) training for other staff.

### ACTION

- Estimate the minimum number and categories of personnel needed to care for pediatric patients presenting with influenza complications on a given day.

#### Caring for Pediatric Patients with Influenza Complications

Staff Position	Number Needed

The American College of Chest Physicians' Task Force for Mass Critical Care made recommendations for staff augmentation in its document entitled *Definitive Care for the Critically Ill During a Disaster: Medical Resources for Surge Capacity*. While these recommendations are intended for adult critical care, some of the position-specific recommendations may be applicable to pediatric hospitals, including those for physicians, nurses, respiratory therapists, and pharmacists. If it is not already described in your facility's pandemic influenza plan, use the next page of this workbook to identify the appropriate alternate staffing models for your hospital.

**ACTION**

- Determine the appropriate alternate staffing model for physicians in your facility during a sustained influenza pandemic.
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- 

- Determine the appropriate alternate staffing model for nurses in your facility during a sustained influenza pandemic.
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- Determine the appropriate alternate staffing model for respiratory therapists in your facility during a sustained influenza pandemic.
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- Determine the appropriate alternate staffing model for pharmacists in your facility during a sustained influenza pandemic.
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- Determine the most effective strategy to educate staff on the selected alternate staffing models.
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## Just-in-Time (JIT) Training

It is not practical for clinicians to be expected to know everything about every possible pandemic that could occur. Thus, JIT training delivers up to date information, often with the help of media and technology, to a staff person when it is needed to update their knowledge base or clinical skills in a specific situation.

### Tool

*Education and Cross Training of Healthcare Workers. An interactive, Web-based training*  
(In development)

## Disaster Training

*Medical Emergency Preparedness—Pediatrics (MEP-P) Just-in-Time Training Manual*  
All Alaska Pediatric Partnership (AAPP)  
<http://www.hss.state.ak.us/prepared/assets/conference/MEPP-Manual.pdf>

#### Modules

1. Pediatric Assessment for Occasional Peds Providers
2. Children in Crisis: Basics of Disaster Behavioral Health
3. S.T.A.R.T. and JumpSTART Triage: The Basics
4. Newport HT50 Ventilator Orientation and Training

*Pediatric Disaster Planning and Preparedness Web-based Training Program*  
Children's National Medical Center  
[http://uat.dccchildrens.com/chexwizing/pediatricdisasterwbtprogram\\_b/index.html](http://uat.dccchildrens.com/chexwizing/pediatricdisasterwbtprogram_b/index.html)

#### Modules

1. Why Disaster Planning for Children Is Needed
2. Assessing Community Risk for Disasters Involving Children
3. Preparing the Community for Disasters Involving Children
4. Responding to Disasters Involving Children (Assessment/Triage)
5. Responding to Disasters Involving Children

A well trained staff is an integral component to successfully increasing your hospital's surge capacity. Sometimes, however, staff have to be trained quickly or "just in time" to perform their duties. For 2009 H1N1 influenza training needs, the SMEs who provided input for this workbook suggest that the topics outlined below be covered in just-in-time (JIT) training for your staff. These topics are being included in online training modules that are being developed, along with this workbook, as tools resulting from the CDC DHQP Pediatric Healthcare Response to Pandemic H1N1 Influenza Stakeholder Meeting, which was held in September 2009.

## Suggested JIT Training Topics for pandemic Influenza

### Module 1: Overview

- Define high-risk population
- Overview of 2009 H1N1 influenza in pediatric patients
- Personal Protective Equipment (PPE) and isolation
- CDC antiviral and vaccine recommendations

### Module 2: Mild Patient

- Overview
- Signs and symptoms
- Differential diagnosis
- Assessment
- Management

### Module 3: Moderate Patient

- Overview
- Signs and symptoms
- Differential diagnosis
- Assessment
- Management

#### Module 4: Severe Patient

- Overview
- Signs and Symptoms
- Differential Diagnosis
- Assessment
- Management

#### Module 5: Advanced Management of the Moderate to Severely Ill Patient

- Shock
- Basic mechanical ventilation

#### Module 6: Nursing

- Overview

#### Module 7: Respiratory Therapy

- Overview

#### Module 8: Office Emergency Preparedness

#### Module 9: Toolbox

- Patient Care Guidelines
- Resources
- Simulations/Drills

## ACTIONS

- Identify and record gaps in your hospital's current planning efforts related to Area 3 – Coaching and Staffing Models.
- 
- 
- 

- Define the next steps your facility needs to take to define its coaching and staffing models for a pandemic influenza surge scenario.
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- Describe the long-term steps your facility needs to take to better prepare staff and staffing models for an influenza pandemic surge scenario.
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- Define any facility-specific areas for JIT training for your staff.

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- Identify additional JIT training resources that may be beneficial for your facility.

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## **AREA 4 – COORDINATION WITH THE COMMUNITY**

### **PANDEMIC INFLUENZA RESPONSE**

Topics in this area include:

- Reviewing the Hospital Incident Command System (HICS)
- Engaging in community planning efforts
- Working with community partners to identify data needs
- Leveraging community resources

Improving coordination of your community's overall influenza pandemic response can benefit your hospital by:

- Improving communication between your organization, emergency management agencies, and public health departments
- Establishing common community emergency response nomenclature and command structures
- Defining protocols for consistent community messaging and treatment
- Increasing access to situational awareness regarding additional staff, equipment, transportation, and other scarce resources
- Avoiding duplication of planning efforts

#### **Hospital Incident Command System (HICS)**

Because hospitals routinely face increased or extraordinary demands during disaster situations, it is critical that they be fully integrated into emergency management planning efforts at federal, state, and local levels. Successful collaboration depends on coordinated pre-event planning and a well coordinated Incident Command System (ICS). By bringing emergency management agencies, public health departments, and healthcare systems together and having all entities using a common command system and nomenclature, communities can improve the quality of coordination that these entities will be able to achieve during public health emergencies.

Many hospitals are familiar with HICS, which can be a good tool for helping healthcare organizations with their internal all-hazard planning process. An added benefit of using HICS is that the structure, roles, reporting channels, and terms used in HICS are standardized with ICS, which is commonly used by local and state emergency management agencies. An overview of the HICS Training Modules is provided below. These modules can be accessed at the FEMA Independent Study Program website (<http://training.fema.gov/IS/>).

### **HICS Training Modules**

- Module 1** IS-100.HC – Introduction to the Incident Command System for Healthcare/Hospitals
- Module 2** ICS-200 – Applying ICS to Healthcare Organizations
- Module 3** IS-700.a – National Incident Management System (NIMS), An Introduction
- Module 4** IS 800.b – National Response Framework, An Introduction

My hospital currently utilizes the HICS emergency management system.

- Yes
- No

### **Hospital Incident Command System (HICS)**

An emergency management system that employs a logical, unified management/command structure, defined responsibilities, clear reporting channels, and a common nomenclature to help unify hospitals with other emergency responders.

### **Incident Command System (ICS)**

A standardized on-scene incident management concept designed specifically to allow responders to adopt an integrated organizational structure equal to the complexity and demands of any single incident or multiple incidents without being hindered by jurisdictional boundaries.

### **Resources**

FEMA Independent Study Program  
<http://training.fema.gov/IS/>

Center for HICS Education and Training.  
<http://www.hicscenter.org/>

*Medical Surge Capacity and Capability: A Management System for Integrating Medical and Health Resources During Large-Scale Emergencies.*  
<http://www.hhs.gov/disasters/discussion/planners/mscc/mscc080626.pdf>

A review of local healthcare emergency preparedness coalitions' objective statements reveal that communities use their coalitions for a variety of purposes, including:

- Creating a communication forum to enhance regional emergency planning
- Strengthening all-hazards emergency preparedness and response by the healthcare system
- Developing all-hazard preparedness plans with emergency management and public health officials
- Creating a policy advisory board to review plans and resource sharing agreements
- Implementing an emergency communication and coordination system for healthcare organizations
- Coordinating training and planning support between community entities
- Implementing standardized practices between response partners
- Coordinating region wide exercises and trainings

### Planning Reminder

In Area 1 – Pediatric Medical Liaisons and Other Key Contacts, you identified contact persons at your local emergency management agency and public health department.

## ENGAGE IN COMMUNITY PLANNING EFFORTS

It is important to establish on-going partnerships with your local emergency management agencies and public health departments prior to a public health emergency. It is not enough to have simply identified a contact person.

### SME TIP

Planning by individual facilities is necessary but not sufficient for robust community emergency response.

### ACTION

- Develop partnerships with local emergency management agencies and public health departments by participating in a community-wide emergency preparedness coalition.

The U.S. Department of Health and Human Services' (HHS') document entitled *Medical Surge Capacity and Capability: A Management System for Integrating Medical and Health Resources During Large-Scale Emergencies* states, "A healthcare coalition organizes individual healthcare assets into a single functional unit. Its goal is to maximize medical surge capacity and capability across the coalition through cooperative planning, information sharing, and management coordination . . . [A healthcare coalition creates] the ability to move medical resources to sites of greatest need."

## WORKING WITH COMMUNITY PARTNERS TO COLLECT NEEDED DATA

SMEs that provided input for this workbook determined two epidemiological data points needed by hospitals to more effectively care for patients during an influenza pandemic surge. These data points are (1) the age distribution of pediatric patients and (2) the site of care where the patients present for evaluation and treatment. Collecting these data will require coordination with other healthcare entities and public health partners. Planners should consider working with these partners to determine what avenues exist for collecting and distributing these data.

A breakdown of the needed epidemiological data is shown below.

#### **Age Distribution of Data Collected**

- 0 – 2 years**
- 2 – 12 years**
- 12 – 18 years**
- > 18 with special healthcare needs**

#### **Sites of Care Where Pediatric Patients Present**

- Hospitals**
- Primary care providers**
- Federally Qualified Health Centers**
- Urgent care centers**
- Schools and school-based health centers**

## **LEVERAGING COMMUNITY RESOURCES**

It is important to know if your local Medical Reserve Corp (MRC) and Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP) are currently incorporated into your state and local response plans. It is very likely that they are already engaged by both public health departments and emergency management agencies.

In order for these groups to provide the most benefit to your hospital, you need to understand their roles and how they work collaboratively before, during, and after the response to a public health emergency.

### **Medical Reserve Corps (MRC)**

A group comprised of organized medical and public health professionals who serve as volunteers to respond to natural disasters and emergencies. Assists communities nationwide during emergencies and for ongoing efforts in public health

### **Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP)**

A program that provides guidance and assistance for the development of standardized state-based programs for registering and verifying the credentials of volunteer health professionals in advance of an emergency or disaster

## Resources

*Pandemic Influenza Planning Guidance for Medical Reserve Corps Units*

Office of the Civilian Volunteer Medical Reserve Corps

[http://www.medicalreserv корпус.gov/File/MRC\\_Pandemic\\_Influenza\\_Planning\\_Guidance.pdf](http://www.medicalreserv корпус.gov/File/MRC_Pandemic_Influenza_Planning_Guidance.pdf)

*Integration of the MRC and ESAR-VHP Medical Reserve Corps Units*

Office of the Civilian Volunteer Medical Reserve Corps

[http://www.medicalreserv корпус.gov/File/ESAR\\_VHP/ESAR-VHPMRCIntegrationFactSheet.pdf](http://www.medicalreserv корпус.gov/File/ESAR_VHP/ESAR-VHPMRCIntegrationFactSheet.pdf)

## ACTION

- Review the resources in the sidebar to understand better some of the resource capabilities in your community, including MRC and ESAR-VHP.

## MRC

Determine if your local MRC is adequately prepared for an influenza pandemic in accordance with the laws, plans, and procedures of your local jurisdiction and state.

Expect and allow for absences or unavailability of MRC volunteers during an influenza pandemic due to varying factors, such as personal or family member illness, community containment measures, and school, business, or public transportation closures.

## ESAR-VHP

Each state ESAR-VHP program collects and verifies information on the identity, licensure status, privileges, and credentials of volunteers. As part of their responsibilities, each state ESAR-VHP program should track, train, and prepare volunteer health professionals who are not affiliated with a local MRC unit or another local/state response.

## ACTION

- Identify and record gaps in your hospital's current planning efforts related to Area 4 – Coordination with External Community Response.
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## ACTIONS

- Define the next steps your facility needs to take to improve external coordination with your community's influenza pandemic response planning efforts.

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- Describe the long-term changes your facility could make to better integrate into your community's future pandemic response planning efforts.

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## Family-Centered Care

An innovative approach to the planning, delivery, and evaluation of healthcare that is grounded in a mutually beneficial partnership among patients, families and health care professionals

PFCC embraces these concepts:

1. We are providing care for a person, not a condition.
2. The patient is best understood in the context of his or her family, culture, values, and goals.
3. Honoring this context will result in better healthcare, safety, and patient satisfaction.

## AAP Examples of PFCC

### Patient Flow

Operations that require a parent to leave a child for registration while the child is receiving care can be made more family centered by implementing bedside registration that allows the parent to stay with the child.

### Security and Identification

Many emergency departments (EDs) require visitor badges. Change the labels to read "family" to reinforce that family members are valued.

## AREA 5 – PATIENT- AND FAMILY-CENTERED CARE (PFCC) DURING A PANDEMIC INFLUENZA SURGE

In *Emergency Care for Children: Growing Pains*, the Institute of Medicine (IOM) concluded that

failure to implement PFCC into emergency care can result in many adverse outcomes, such as miscommunication, difficulty obtaining informed consent, inadequate understanding of diagnosis and treatment by families, clinical bias, ethnic disparities, lower quality of care, and dissatisfaction with care.

### SME TIP

Your facility should determine minimum standards of PFCC that must be provided during times of patient surge.

### ACTION

► Identify ways that your hospital can plan to reasonably provide PFCC in the following areas presented in the American Academy of Pediatrics (AAP) Technical Report entitled *Patient- and Family-Centered Care of Children in the Emergency Department*.

**Patient Flow:** Develop a patient flow protocol that limits the amount of time a child is separated from family members.

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**Security and Identification:** Ensure family members are clearly identified.

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**Family Presence:** Describe difficult-to-watch procedures in a clear and unbiased manner to parents, and allow them to choose if they want to be present during the procedure.

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**Interpretation Services:** Ensure timely access to professional interpreters rather than relying on accompanying friends and family members.

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**Comfort Care:** Plan for routine measurement of patient pain, anxiety, and comfort throughout the patient's time in the hospital. This may involve pharmacologic or non-pharmacologic interventions, child-life services, and psychosocial or spiritual support.

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**Coordination with the Medical Home:** As much as possible, try to coordinate with a patient's usual healthcare provider for valuable insight during initial evaluation and throughout treatment.

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**SME TIP**

Consider planning with psychologists, social workers, and faith-based leaders to assist with providing PFCC.

## Resources

*Patient- and Family-Centered Care of Children in the Emergency Department*  
American Academy of Pediatrics (AAP)  
<http://aappolicy.aappublications.org/cgi/reprint/pediatrics.122/2/e51.pdf>

*Patient- and Family-Centered Care and the Role of the Emergency Physician Providing Care to a Child in the Emergency Department*  
American College of Emergency Physicians (ACEP)  
<http://www.acep.org/practres.aspx?id=29598>

The Institute for Family-Centered Care  
<http://www.familycenteredcare.org/index.html>

**AAP Example of PFCC**  
**Coordination with the Medical Home**

Communication with the medical home can be supported through teleconferences, electronic health records, and automated health-information exchange.

## Resources

*Resources for Parents and Child Caregivers*

Centers for Disease Control and Prevention (CDC)

<http://www.cdc.gov/h1n1flu/parents/>

*Caring for Someone Sick at Home*

Centers for Disease Control and Prevention (CDC)

<http://www.cdc.gov/h1n1flu/homecare/>

## AAP Example of PFCC

### The Physical Plant

Provide restrooms, diaper changing space, dedicated and safe waiting areas, and refreshments.

**Discharge Planning:** Customize discharge instructions to reflect family preferences and to provide instructions for continuing care at home and following up with the patient's medical home.

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**The Physical Plant:** Look at your hospital's physical facility and identify areas that could be redesigned to better accommodate families, including well siblings.

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### SME TIP

Provide developmentally appropriate videos in waiting rooms; these can be either for entertainment or educational purposes.

## ACTIONS

- Identify and record gaps in your hospital's current planning efforts related to Area 5 – Pandemic Influenza Pediatric Triage.

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- Describe the immediate next steps your facility needs to take to improve pediatric triage.

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- Describe the long-term steps your facility needs to take to improve pediatric triage.

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## **AREA 6 – PANDEMIC INFLUENZA PEDIATRIC TRIAGE**

Many agencies and SME groups have developed sample algorithms to assist with pediatric patient triage during the 2009 H1N1 influenza pandemic using the data categories included in this area of the workbook. Two sample algorithms are provided on pages 68 and 69 of this workbook. The algorithm published on page 68 was published by CDC and AAP on the CDC H1N1 site (and is duplicated here). The algorithm on page 69 was developed by the SMEs at the Stakeholder meeting. These may be adapted for use in your hospital.

For non-routine pediatric providers, a more detailed algorithm may make the patient assessment process easier, and more experienced pediatric providers may prefer a simplified version.

### **ACTION**

► Determine level of acuity and hospital capacity in order to identify which patients to admit, transfer, or discharge to home care with consideration to the following criteria: age, underlying conditions, illness severity, and community acuity.

#### **Age**

Consider ages for higher risk of complications or vulnerability.

#### **Underlying conditions**

Consider co-morbidities, such as diabetes, asthma, human immunodeficiency virus (HIV), suppressed immune system, and heart conditions.

#### **Illness severity**

Determine the severity of the patient's condition, including the number of days since onset of illness. Compare the patient's present condition to the average case condition that would typically be expected at this current day of illness.

#### **Community Acuity**

Maintain situational awareness of influenza illness in the community. Consider community prevalence, family exposure, and school or daycare exposure.

## ACTIONS

- Identify and record gaps in your hospital's current planning efforts related to Area 6 – Pandemic Influenza Pediatric Triage.

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- Describe the immediate next steps your facility needs to take to improve pediatric triage.

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- Describe the long-term steps your facility needs to take to improve pediatric triage.

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## GENERAL HOSPITAL WORKBOOK

### GENERAL HOSPITAL FOCUS

#### TARGET AUDIENCE

General hospitals that have pediatric units or the capability to convert existing hospital units into pediatric units

#### OVERVIEW

Subject matter experts (SMEs) identified five areas that should be addressed by general hospitals when coordinating medical care for pediatric influenza-like illness (ILI) across a community.

Area 1 Pediatric Medical Liaisons and Other Key Contacts

Area 2 Internal Pediatric Care Capabilities Assessment

Area 3 Coordination with the Community Pandemic Influenza Response

Area 4 Patient- and Family-Centered Care During a Pandemic Influenza Surge

Area 5 Pandemic Influenza Pediatric Triage

## **AREA 1 – PEDIATRIC MEDICAL LIAISONS AND OTHER KEY CONTACTS**

### **Pediatric Medical Liaison**

A person selected to represent a specific hospital when coordinating pediatric ILI medical care with other hospitals in the community

### **Non-routine Pediatric Provider**

A provider who does not regularly see children (e.g., an internist)

Improving communication between hospitals in a community will improve the coordination of pediatric ILI medical care. If relationships with other hospitals outside of typical jurisdictions and referral patterns have not been established, developing these relationships should be a priority. You can achieve this by defining the role of a pediatric medical liaison for your hospital and selecting the appropriate person to fill this role. The primary role of the pediatric medical liaison is to develop relationships with other hospitals, including pediatric hospitals. Other roles and responsibilities of the pediatric medical liaison are to:

- Develop new relationships with other hospitals
- Maintain existing relationships with other hospitals
- Communicate with internal hospital staff to facilitate continuity of care for pediatric patients with ILI
- Provide clinical expertise in pediatric care to non-routine pediatric providers, if possible. If not, develop a relationship with a physician who can provide pediatric expertise
- Assist in completing the identified areas in this workbook
- Review this workbook with hospital administrators and other key hospital decision-makers

### **SME TIP**

It is recommended that pediatric medical liaisons for general hospitals be pediatric physicians or physicians with additional training in pediatrics.

**ACTION**

- Identify an appropriate pediatric medical liaison for your hospital and record their information below.

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**Name:****Title:****Phone:****Fax:****E-mail:**

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**ACTION**

- Identify pediatric medical liaisons for each hospital in your community and record their information in the space provided.

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**Hospital Name:****Liaison Name:****Title:****Address:****Phone:****Fax:****E-mail:**

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**Hospital Name:****Liaison Name:****Title:****Address:****Phone:****Fax:****E-mail:**

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**Hospital Name:**

**Liaison Name:**

**Title:**

**Address:**

**Phone:**

**Fax:**

**E-mail:**

**Hospital Name:**

**Liaison Name:**

**Title:**

**Address:**

**Phone:**

**Fax:**

**E-mail:**

In addition to communicating with other hospitals, it is important for the pediatric medical liaison to establish relationships with other healthcare and supporting sectors that participate in the community-wide influenza pandemic response.

#### **ACTION**

- Identify primary points of contact for community agencies in other healthcare delivery and pandemic response sectors, including public health departments, emergency management agencies, and specialized pediatric medical care providers.

**Sector:** **Public Health Department**

**Agency:**

**Name:**

**Title:**

**Address:**

**Phone:**

**Fax:**

**E-mail:**

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**Sector:** **Public Health Department**

**Agency:**

**Name:**

**Title:**

**Address:**

**Phone:**

**Fax:**

**E-mail:**

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**Sector:** **Emergency Management Agency**

**Agency:**

**Name:**

**Title:**

**Address:**

**Phone:**

**Fax:**

**E-mail:**

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**Sector:** **Emergency Management Agency**

**Agency:**

**Name:**

**Title:**

**Address:**

**Phone:**

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**Sector:**  
**Agency:**  
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**Sector:**  
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## ACTIONS

- Identify and record gaps in your hospital's current planning efforts related to Area 1 – Pediatric Medical Liaisons and Other Key Contacts.

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- Describe any additional duties of the pediatric medical liaison that are specific to your facility.

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## Surge Capacity

A healthcare system's ability to manage a sudden or rapidly progressive influx of patients within the currently available resources at a given point in time

## Capabilities and Services Inventory

If you are unsure of the surge capacity of your community's healthcare system, consider working with your local hospital association to conduct a capabilities and services inventory with other hospitals.

## Possible Inventory Data Categories

- Ancillary services
- Beds by type (typical and surge capacity)
- Morgue capacity
- Negative pressure rooms
- Pediatric ventilators and adult ventilators with a converter
- Personal protective equipment
- Space and beds used in elective procedures that can be converted
- Transport capacity

## Tools

### *FluSurge 2.0*

A spreadsheet-based model that provides hospital administrators and public health officials with estimates of the surge in demand for hospital-based services during an influenza pandemic

Centers for Disease Control and Prevention (CDC)

<http://www.cdc.gov/flu/tools/flusurge/>

## **AREA 2 – INTERNAL PEDIATRIC CARE**

### **CAPABILITIES ASSESSMENT**

The ability of a hospital to provide care during an influenza pandemic is not focused only on bed availability but also on acquiring adequate medical staff, treatment spaces, medical equipment, and the supplies that are needed for patient care.

To assess the pediatric care capabilities of your hospital, focus on the following four areas:

- Inpatient capacity
- Pediatric equipment and supplies
- Personnel
- Pediatric transport capability

The most effective way to complete this assessment is to refer to your existing pandemic influenza and/or disaster response plan. It also will be beneficial to utilize any previous pandemic surge modeling you have completed using software such as FluSurge 2.0 (see sidebar) to determine your hospital's ability to respond to a pediatric ILI patient surge.

## **INPATIENT CAPACITY**

### **ACTION**

- Identify the capacity of your inpatient hospital units that will be able to receive pediatric patients.

When identifying surge capacity, remember to consider:

- Unoccupied beds
- Gurneys and stretchers
- Licensed beds
- Open spaces adequate for care for which staffing and equipment could be arranged

The hospital units for pediatric care of ILI patients at my facility are: (Check the appropriate box and then complete the corresponding chart below)

- Units of the hospital that already receive pediatric patients

Bed Category	Typical Available & Staffed Beds	Surge Capacity
<b>Pediatric Critical Care</b>		
<b>Pediatric Medical/Surgical</b>		
<b>Totals</b>		

- Adult or other hospital units that can be converted to provide appropriate care

If your facility currently does not treat pediatric patients, adult beds may be used if the beds have side rails, are set at the lowest possible height, and are unplugged so the buttons to adjust the beds do not work.

If acceptable beds can be located at your facility, complete the following chart.

Bed Category (converted)	Surge Capacity
<b>Pediatric Critical Care</b>	
<b>Pediatric Medical/Surgical</b>	
<b>Totals</b>	

## Resources

*Children in Disasters: Hospital Guidelines for Pediatric Preparedness*  
 Centers for Bioterrorism  
 Preparedness Program Pediatric Task Force  
[http://www.nyc.gov/html/doh/downloads/pdf/b\\_hpp/hepp-peds-childrenindisasters-010709.pdf](http://www.nyc.gov/html/doh/downloads/pdf/b_hpp/hepp-peds-childrenindisasters-010709.pdf)

Recommendations for Increasing NYC Pediatric Critical Care Surge Capacity  
 DRAFT September 2009

**Appendix C** SURGE CAPACITY EXPANSION TOOL (example Schneider Children's Hospital)

**BED AVAILABILITY and ISOLATION ROOMS in TRADITIONAL CLINICAL AREAS**

Date & Time		Select the bed availability for the date/time listed					
Unit & Room	Isolation Y/N - UV & Bag Pressure	Adult availability status	# of beds per room	# of additional Required Equipment	# of Pediatric/Halway beds	Minimum # of possible beds per room	Comments
ICU							
ICU A	Yes						1. Shared ventilator/VA machine
ICU B	Yes						
ICU C	Yes						
ICU D	Yes						
ICU E	Yes						
ICU F	Yes						
ICU G	Yes						
ICU H	Yes						
ICU I	Yes						
ICU J	Yes						
ICU K	Yes						
ICU L	Yes						
ICU M	Yes						
ICU N	Yes						
ICU O	Yes						
ICU P	Yes						
ICU Q	Yes						
ICU R	Yes						
ICU S	Yes						
ICU T	Yes						
ICU U	Yes						
ICU V	Yes						
ICU W	Yes						
ICU X	Yes						
ICU Y	Yes						
ICU Z	Yes						

\* A = available; SA = shortly available (within 2 hours); AP = availability pending (within 12 – 24 hours); UN = unavailable  
 \*\* PG = pulse oximeter; OT = oxygen tank; OS = oxygen splitter; SM = suction machine

## Surge Capacity Expansion Tool Recommendations for Increasing NYC Pediatric Critical Care Surge Capacity

NYC Pediatric Disaster Coalition and New York City Department of Health and Mental Hygiene  
[http://www.nyc.gov/html/doh/downloads/pdf/b\\_hpp/hepp-pedsconf02-rec-for-incr-picu-surge.pdf](http://www.nyc.gov/html/doh/downloads/pdf/b_hpp/hepp-pedsconf02-rec-for-incr-picu-surge.pdf)

\* This document has appendices that can be used during your capabilities assessment.

## PEDIATRIC EQUIPMENT AND SUPPLIES

### ACTIONS

- Determine the current inventory of pediatric equipment and supplies at your facility.
- Using the resources listed in the sidebar, identify pediatric equipment and supplies that every hospital should have available in order to provide care for pediatric patients. (Create an inventory sheet similar to the one shown on the next page.)

Be sure to consider the following types of items, especially if caring for children in a primarily adult unit or hospital:

- Broselow™ Pediatric Emergency Tape
- Medications, including pediatric drug-dosing guidelines
- Oxygen administration equipment (e.g., masks and nasal cannulas)
- IV administration and initiation equipment (e.g., angio catheters and intraosseous drills)
- Supplies, including a "pediatric crash cart" and appropriately sized:
  - Airway and respiratory supplies
  - Restraints and orthopedic supplies
  - Chest tubes
  - Dressings
  - Linens
  - Personal care supplies, including diapers
- Instruments and equipment, including disposable blood pressure cuffs

### SME TIP

Consider meeting with other Pediatric Medical Liaisons within your community to share information and concerns regarding each liaison's hospital's capabilities assessments.

## Sample Inventory Sheet

What actions do you need to take to address pediatric supply needs?

## PERSONNEL

A personnel assessment should address:

- Identification of lead staff members
  - Alternate staffing models
  - Just-in-time (JIT) training needs

Non-routine pediatric providers at your facility who will be asked to provide medical care to pediatric ILI patients during a surge scenario may need to consult with a physician having pediatric expertise. During each hospital shift, at least one onsite pediatric physician should be available and clearly identified in case of an emergency situation.

These physicians also can be integrated into coaching or alternate staffing models to augment existing capacity or to assist with the JIT training of other staff.

## Just-in-Time (JIT) Training

Training the learner receives "just in time" when it is needed for a particular purpose. Typically includes demonstrations on application of the material in several patient care scenarios

## Alternate Solution

If in-house support for pediatric expertise is not available, the pediatric medical liaison should establish a relationship with an offsite pediatric physician that can provide needed support. This could be a pediatric medical liaison from a local pediatric hospital. This person should be available by phone at all times in case of an emergency situation.

**ACTION**

- For each shift (e.g., day, night, or weekends), identify lead staff members who have pediatric experience or pediatric training.

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**Name:****Department:****Job Title:****Shift:****Phone:****E-mail:**

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**Name:****Department:****Job Title:****Shift:****Phone:****E-mail:**

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**Name:****Department:****Job Title:****Shift:****Phone:****E-mail:**

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**Name:****Department:****Job Title:****Shift:****Phone:****E-mail:**

## ACTION

- Estimate the minimum number and categories of personnel needed to care for pediatric patients presenting with influenza complications on any given day.

### Caring for Pediatric Patients with Influenza Complications

Staff Position	Number Needed

The American College of Chest Physicians' Task Force for Mass Critical Care made recommendations for staff augmentation in its document entitled *Definitive Care for the Critically Ill During a Disaster: Medical Resources for Surge Capacity*. While these recommendations are intended for adult critical care, some of the position-specific recommendations may be applicable to pediatric hospitals, including those for physicians, nurses, respiratory therapists, and pharmacists. If it is not already described in your facility's pandemic influenza plan, use the next page of this workbook to identify the appropriate alternate staffing models for your hospital.

## Resource

*Definitive Care for the Critically Ill During a Disaster: Medical Resources for Surge Capacity*  
American College of Chest Physicians, Task Force for Mass Critical Care  
[http://chestjournal.chestpubs.org/content/133/5\\_suppl/32S.full.pdf](http://chestjournal.chestpubs.org/content/133/5_suppl/32S.full.pdf)

## Principles for Staffing Models

1. Patient care assignments for caregivers should be managed by the most experienced clinician available.
2. Assignments should be based on staff abilities and experience.
3. Delegation of duties that usually lie outside the scope of workers' normal duties may be necessary and appropriate under surge conditions.
4. Systematic efforts to reduce care variability, procedure complications, and errors of omission must be used when possible.

## ACTIONS

- Determine the appropriate alternate staffing model for physicians in your facility during a sustained influenza pandemic.

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- Determine the appropriate alternate staffing model for nurses in your facility during a sustained influenza pandemic.

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- Determine the appropriate alternate staffing model for respiratory therapists in your facility during a sustained influenza pandemic.

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- Determine the appropriate alternate staffing model for pharmacists in your facility during a sustained influenza pandemic.

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- Determine the most effective strategy to educate staff on the selected alternate staffing models.

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A well-trained staff is an integral component to successfully increasing your hospital's surge capacity. Sometimes however, staff have to be trained quickly or "just in time" to perform their duties. For 2009 H1N1 influenza training needs, the SMEs who provided input for this workbook suggest that the topics outlined below be covered in just-in-time (JIT) training for your staff. These topics are being included in online training modules that are being developed, along with this workbook, as tools resulting from the CDC DHQP Pediatric Healthcare Response to Pandemic H1N1 Influenza Stakeholder Meeting, which was held in September 2009.

#### **ACTION**

- Provide and record JIT training for non-routine pediatric providers.

### **Suggested JIT Training Modules for Pandemic Influenza**

#### Module 1: Overview

- Define high-risk population
- Overview of 2009 H1N1 influenza in pediatric patients
- Personal Protective Equipment (PPE) and isolation
- CDC antiviral and vaccine recommendations

#### Module 2: Mild Patient

- Overview
- Signs and symptoms
- Differential diagnosis
- Assessment
- Management

#### Module 3: Moderate Patient

- Overview
- Signs and symptoms
- Differential diagnosis
- Assessment
- Management

### **Just-in-Time (JIT) Training**

It is not practical for clinicians to be expected to know everything about every possible pandemic that could occur. Thus, JIT training delivers up to date information, often with the help of media and technology, to a staff person when it is needed to update their knowledge base or clinical skills in a specific situation.

#### **Tool**

*Education and Cross Training of Healthcare Workers. An interactive, Web-based Training*  
(In development)

#### **Disaster Training**

*Medical Emergency Preparedness—Pediatrics (MEP-P) Just-in-Time Training Manual*  
All Alaska Pediatric Partnership (AAPP)  
<http://www.hss.state.ak.us/prepared/assets/conference/MEPP-Manual.pdf>

#### Modules

1. Pediatric Assessment for Occasional Peds Providers
2. Children in Crisis: Basics of Disaster Behavioral Health
3. S.T.A.R.T. and JumpSTART Triage: The Basics
4. Newport HT50 Ventilator Orientation and Training

*Pediatric Disaster Planning and Preparedness Web-based Training Program*

Children's National Medical Center  
[http://uat.dccchildrens.com/chexwizard/pediatricdisasterwbtprogram\\_b/index.html](http://uat.dccchildrens.com/chexwizard/pediatricdisasterwbtprogram_b/index.html)

#### Modules

1. Why Disaster Planning for Children Is Needed
2. Assessing Community Risk for Disasters Involving Children
3. Preparing the Community for Disasters Involving Children
4. Responding to Disasters Involving Children (Assessment/Triage)
5. Responding to Disasters Involving Children

#### Module 4: Severe Patient

- Overview
- Signs and Symptoms
- Differential Diagnosis
- Assessment
- Management

#### Module 5: Advanced Management of the Moderate to Severely Ill Patient

- Shock
- Basic mechanical ventilation

#### Module 6: Nursing

- Overview

#### Module 7: Respiratory Therapy

- Overview

#### Module 8: Office Emergency Preparedness

#### Module 9: Toolbox

- Patient Care Guidelines
- Resources
- Simulations/Drills

## ACTIONS

- Identify and record gaps in your hospital's current planning efforts related to Area 3 – Coaching and Staffing Models.
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- Define the immediate next steps your facility needs to take to define its coaching and staffing models for a pandemic influenza surge scenario.
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- Describe the long-term steps your facility needs to take to better prepare staff and staffing models for an influenza pandemic surge scenario.
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## PEDIATRIC TRANSPORT CAPABILITY

Interfacility transport of children is a critical component of a successfully coordinated community response to an influenza pandemic. Your community must determine the parameters that will guide transport.

### Resource

*Air and Ground Transport of Neonatal and Pediatric Patients, 3<sup>rd</sup> Edition*  
American Academy of Pediatrics (AAP)  
[https://www.nfaap.org/netFORUM/eweb/DynamicPage.aspx?webcode=aapbks\\_productdetail&key=fa657e6e-d1ad-4c6b-aeca-bfb35b421baa](https://www.nfaap.org/netFORUM/eweb/DynamicPage.aspx?webcode=aapbks_productdetail&key=fa657e6e-d1ad-4c6b-aeca-bfb35b421baa)

### SME TIP

During your planning, use the AAP's revised and expanded edition of the *Air and Ground Transport of Neonatal and Pediatric Patients* tool listed in the sidebar.

### ACTION

- Coordinate with all entities that could provide pediatric patient transport both to the hospital (in routine and emergency cases) and from the hospital upon transfer or discharge to expedite bed availability for other pediatric cases.

Meet with other pediatric medical liaisons and community influenza pandemic committees to decide which facilities in your community will care for the sickest children. Record that information here.

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What are the criteria agreed upon by your community to transport pediatric cases to this facility?

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What resources are available to your hospital to aid in this transport?

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## ACTIONS

- Identify and record gaps in your hospital's current planning efforts related to Area 2 – Assess for Internal Pediatric Care Capabilities.

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- Describe the next steps your facility needs to take to improve its internal capabilities to care for pediatric patients during an influenza pandemic surge.

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- Describe the long-term steps your facility needs to take to integrate pediatric care capabilities into its future influenza pandemic preparedness efforts.

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## ***AREA 3 – COORDINATION WITH THE COMMUNITY PANDEMIC INFLUENZA RESPONSE***

Topics in this area include:

- Reviewing the Hospital Incident Command System (HICS)
- Engaging in community planning efforts
- Working with community partners to identify data needs
- Leveraging community resources

Improving coordination of your community's overall influenza pandemic response can benefit your hospital by:

- Improving communication between your organization, emergency management agencies, and public health departments
- Establishing common community emergency response nomenclature and command structures
- Defining protocols for consistent community messaging and treatment
- Increasing access to situational awareness regarding additional staff, equipment, transportation, and other scarce resources
- Avoiding duplication of planning efforts

### **Hospital Incident Command System (HICS)**

Because hospitals routinely face increased or extraordinary demands during disaster situations, it is critical that they be fully integrated into emergency management planning efforts at federal, state, and local levels. Successful collaboration depends on coordinated pre-event planning and a well coordinated Incident Command System (ICS). By bringing emergency management agencies, public health departments, and healthcare systems together and having all entities using a common command system and nomenclature, communities can improve the quality of coordination that these entities will be able to achieve during public health emergencies.

Many hospitals are familiar with HICS, which can be a good tool for helping healthcare organizations with their internal all-hazard planning process. An added benefit of using HICS is that the structure, roles, reporting channels, and terms used in HICS are standardized with ICS, which is commonly used by local and state emergency management agencies. An overview of the HICS Training Modules is provided below. These modules can be accessed at the FEMA Independent Study Program website (<http://training.fema.gov/IS/>).

### HICS Training Modules

- Module 1** IS-100.HC – Introduction to the Incident Command System for Healthcare/Hospitals
- Module 2** ICS-200 – Applying ICS to Healthcare Organizations
- Module 3** IS-700.a – National Incident Management System (NIMS), An Introduction
- Module 4** IS 800.b – National Response Framework, An Introduction

My hospital currently utilizes the HICS emergency management system.

- Yes
- No

### Hospital Incident Command System (HICS)

An emergency management system that employs a logical, unified management/command structure, defined responsibilities, clear reporting channels, and a common nomenclature to help unify hospitals with other emergency responders

### Incident Command System (ICS)

A standardized on-scene incident management concept designed specifically to allow responders to adopt an integrated organizational structure equal to the complexity and demands of any single incident or multiple incidents without being hindered by jurisdictional boundaries

### Resources

FEMA Independent Study Program  
<http://training.fema.gov/IS/>

*Center for HICS Education and Training*  
Washington Hospital Center and Kaiser Permanente  
<http://www.hicscenter.org/>

*Medical Surge Capacity and Capability: A Management System for Integrating Medical and Health Resources During Large-Scale Emergencies*  
U.S. Department of Health and Human Services (HHS)  
<http://www.hhs.gov/disasters/discussion/planners/mscc/mscc080626.pdf>

A review of local healthcare emergency preparedness coalitions' objective statements reveal that communities use their coalitions for a variety of purposes, including:

- Creating a communication forum to enhance regional emergency planning
- Strengthening all-hazards emergency preparedness and response by the healthcare system
- Developing all-hazard preparedness plans with emergency management and public health officials
- Creating a policy advisory board to review plans and resource sharing agreements
- Implementing an emergency communication and coordination system for healthcare organizations
- Coordinating training and planning support between community entities
- Implementing standardized practices between response partners
- Coordinating region wide exercises and trainings

### Planning Reminder

In Area 1 — Pediatric Medical Liaisons and Other Key Contacts, you identified contact persons at your local emergency management agency and public health department.

## ENGAGE IN COMMUNITY PLANNING EFFORTS

It is important to establish on-going partnerships with your local emergency management agencies and public health departments prior to a public health emergency. It is not enough to have simply identified a contact person.

### SME TIP

Individual facility planning is necessary but not sufficient for a robust community emergency response.

### ACTION

- Develop partnerships with local emergency management agencies and public health departments by participating in a community-wide emergency preparedness coalition.

The U.S. Department of Health and Human Services' (HHS') document entitled *Medical Surge Capacity and Capability: A Management System for Integrating Medical and Health Resources During Large-Scale Emergencies* states, "A healthcare coalition organizes individual healthcare assets into a single functional unit. Its goal is to maximize medical surge capacity and capability across the coalition through cooperative planning, information sharing, and management coordination . . . [A healthcare coalition creates] the ability to move medical resources to sites of greatest need."

## WORKING WITH COMMUNITY PARTNERS TO COLLECT NEEDED DATA

SMEs that provided input for this workbook determined two epidemiological data points needed by hospitals to more effectively care for patients during a pandemic influenza surge. These data points are (1) the age distribution of pediatric patients and (2) the site of care where the patients present for evaluation and treatment. Collecting these data will require coordination with other healthcare entities and public health partners. Planners should consider working with these partners to determine what avenues exist for collecting and distributing these data.

A breakdown of the needed epidemiological data is shown below.

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#### Age Distribution of Data Collected

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- 0 – 2 years
  - 2 – 12 years
  - 12 – 18 years
  - > 18 with special healthcare needs
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#### Sites of Care Where Pediatric Patients Present

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- Hospitals
  - Primary care providers
  - Federally Qualified Health Centers
  - Urgent care centers
  - Schools and school-based health centers
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## LEVERAGING COMMUNITY RESOURCES

It is important to know if your local Medical Reserve Corp (MRC) and Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP) are currently incorporated into your state and local response plans. It is very likely that they are already engaged by both public health departments and emergency management agencies.

In order for these groups to provide the most benefit to your hospital, you need to understand their roles and how they work collaboratively before, during, and after the response to a public health emergency.

### Medical Reserve Corps (MRC)

A group comprised of organized medical and public health professionals who serve as volunteers to respond to natural disasters and emergencies. Assists communities nationwide during emergencies and for ongoing efforts in public health

### Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP)

A program that provides guidance and assistance for the development of standardized state-based programs for registering and verifying the credentials of volunteer health professionals in advance of an emergency or disaster

## Resources

*Pandemic Influenza Planning Guidance for Medical Reserve Corps Units*

Office of the Civilian Volunteer Medical Reserve Corps

[http://www.medicalreserv корпус.gov/File/MRC\\_Pandemic\\_Influenza\\_Planning\\_Guidance.pdf](http://www.medicalreserv корпус.gov/File/MRC_Pandemic_Influenza_Planning_Guidance.pdf)

*Integration of the MRC and ESAR-VHP Medical Reserve Corps Units*

Office of the Civilian Volunteer Medical Reserve Corps

[http://www.medicalreserv корпус.gov/File/ESAR\\_VHP/ESAR-VHPMRCIntegrationFactSheet.pdf](http://www.medicalreserv корпус.gov/File/ESAR_VHP/ESAR-VHPMRCIntegrationFactSheet.pdf)

## ACTION

- Review the resources in the sidebar regarding some of the resource capabilities in your community, including MRC and ESAR-VHP.

## MRC

Determine if your local MRC is adequately prepared for an influenza pandemic in accordance with the laws, plans, and procedures of your local jurisdiction and state.

Expect and allow for absences or unavailability of MRC volunteers during an influenza pandemic due to varying factors, such as personal or family member illness, community containment measures, and school, business, or public transportation closures.

## ESAR-VHP

Each state ESAR-VHP program collects and verifies information on the identity, licensure status, privileges, and credentials of volunteers. As part of their responsibilities, each state ESAR-VHP program should track, train, and prepare volunteer health professionals who are not affiliated with a local MRC unit or another local/state response.

## ACTION

- Identify and record gaps in your hospital's current planning efforts related to Area 3 – Coordination with External Community Response.
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**ACTIONS**

- Describe the next steps your facility needs to take to improve external coordination with your community's influenza pandemic response planning efforts.

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- Describe the long-term changes your facility could make to better integrate into your community's future influenza pandemic response planning efforts.

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## Family-Centered Care

An innovative approach to the planning, delivery, and evaluation of healthcare that is grounded in a mutually beneficial partnership among patients, families and health care professionals

PFCC embraces these concepts:

1. We are providing care for a person, not a condition.
2. The patient is best understood in the context of his or her family, culture, values, and goals.
3. Honoring this context will result in better healthcare, safety, and patient satisfaction.

## American Academy of Pediatrics Examples of PFCC

### Patient Flow

Operations that require a parent to leave a child for registration while the child is receiving care can be made more family centered by implementing bedside registration that allows the parent to stay with the child.

### Security and Identification

Many emergency departments (EDs) require visitor badges. Change the labels to read "family" to reinforce that family members are valued.

## AREA 4 – PATIENT- AND FAMILY-CENTERED CARE (PFCC) DURING A PANDEMIC INFLUENZA SURGE

In *Emergency Care for Children: Growing Pains*, the Institute of Medicine (IOM) concluded that failure to implement PFCC into emergency care can result in many adverse outcomes, including miscommunication, difficulty obtaining informed consent, inadequate understanding of diagnosis and treatment by families, clinical bias, ethnic disparities, lower quality of care, and dissatisfaction with care.

All hospitals need to prepare to provide some level of PFCC during an influenza pandemic. This preparation should include a plan to track pediatric patients and reunify families that may be separated.

### SME TIP

Consider planning with psychologists, social workers, and faith-based leaders to assist with providing PFCC.

### ACTION

► Identify ways that your hospital can plan to reasonably provide PFCC in the following areas presented in the American Academy of Pediatrics (AAP) Technical Report entitled *Patient- and Family-Centered Care of Children in the Emergency Department*.

**Patient Flow:** Develop a patient flow protocol that limits the amount of time a child is separated from family members.

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**Security and Identification:** Ensure family members are clearly identified.

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**Family Presence:** Describe difficult-to-watch procedures in a clear and unbiased manner to parents, and allow them to choose if they want to be present during the procedure.

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**Interpretation Services:** Ensure timely access to professional interpreters rather than relying on accompanying friends and family members.

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**Comfort Care:** Plan for routine measurement of patient pain, anxiety, and comfort throughout the patient's time in the hospital. This may involve pharmacologic or non-pharmacologic interventions, child-life services, and psychosocial or spiritual support.

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**Coordination with the Medical Home:** As much as possible, try to coordinate with a patient's usual healthcare provider for valuable insight during initial evaluation and throughout treatment.

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## Resources

*Patient- and Family-Centered Care of Children in the Emergency Department*  
American Academy of Pediatrics (AAP)  
<http://aappolicy.aappublications.org/cgi/reprint/pediatrics.122/2/e51.pdf>

*Patient- and Family-Centered Care and the Role of the Emergency Physician Providing Care to a Child in the Emergency Department*  
American College of Emergency Physicians (ACEP)  
<http://www.acep.org/practres.aspx?id=29598>

The Institute for Family-Centered Care  
<http://www.familycenteredcare.org/index.html>

## AAP Example of PFCC

### Coordination with the Medical Home

Communication with the medical home can be supported through teleconferences, electronic health records, and automated health-information exchange.

## Resources

*Resources for Parents and Child Caregivers*

Centers for Disease Control and Prevention (CDC)

<http://www.cdc.gov/h1n1flu/parents/>

*Caring for Someone Sick at Home*

Centers for Disease Control and Prevention (CDC)

<http://www.cdc.gov/h1n1flu/homecare/>

## AAP Example of PFCC

### The Physical Plant

Provide restrooms, diaper changing space, dedicated and safe waiting areas, and refreshments.

**Discharge Planning:** Customize discharge instructions to reflect family preferences and to provide instructions for continuing care at home and following up with the patient's medical home.

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**The Physical Plant:** Look at your hospital's physical facility and identify areas that could be redesigned to better accommodate families, including well siblings.

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### SME TIP

Provide developmentally appropriate videos in waiting rooms; these can be either for entertainment or educational purposes.

## ACTIONS

- Identify and record gaps in your hospital's current planning efforts related to Area 4 – Patient- and Family Centered Care During a Pandemic Influenza Surge

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- Describe the immediate next steps your facility needs to take to improve PFCC.

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- Describe the long-term steps your facility needs to take to improve PFCC.

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## Triage Algorithms

Refer to the algorithms on pages 68 and 69 for application of data categories.

### Page 68

*2009–2010 Influenza Season Triage Algorithm for Children (≤18 years) With Influenza-Like Illness*  
Centers for Disease Control and Prevention (CDC)  
[http://www.cdc.gov/h1n1flu/clinicians/pdf/child\\_algorithm.pdf](http://www.cdc.gov/h1n1flu/clinicians/pdf/child_algorithm.pdf)

### Page 69

*Outpatient evaluation of the Patient with ILI (Pediatric)*  
Developed at the Pediatric Healthcare Response to Pandemic H1N1 Influenza Stakeholder Meeting (September 2009) to help address the need for sample H1N1 influenza triage protocols in the pediatric community

## Tool

*Telephone Triage of Patients with Influenza*  
American Academy of Family Physicians (AAFP)  
<http://www.aafp.org/online/en/home/publications/journals/afp/preprint/influenza-telephone-triage.html>

## Resources

*Resources for Parents and Child Caregivers*  
Centers for Disease Control and Prevention (CDC)  
<http://www.cdc.gov/h1n1flu/parents/>

*Caring for Someone Sick at Home*  
Centers for Disease Control and Prevention (CDC)  
<http://www.cdc.gov/h1n1flu/homecare/>

## AREA 5 – PANDEMIC INFLUENZA PEDIATRIC TRIAGE

Many agencies and SME groups have developed sample algorithms to assist with pediatric patient triage during the 2009 H1N1 influenza pandemic using the data categories included in this area of the workbook. Two sample algorithms are provided on pages 68 and 69 of this workbook. The algorithm published on page 68 was published by CDC and AAP on the CDC H1N1 site (and is duplicated here). The algorithm on page 69 was developed by the SMEs at the Stakeholder meeting. These may be adapted for use in your hospital.

For non-routine pediatric providers, a more detailed algorithm may make the patient assessment process easier, and more experienced pediatric providers may prefer a simplified version.

### ACTION

► Determine level of acuity and hospital capacity in order to identify which patients to admit, transfer, or discharge to home care with consideration to the following criteria: age, underlying conditions, illness severity, and community acuity.

### Age

Consider ages for higher risk of complications or vulnerability.

### Underlying conditions

Consider co-morbidities, such as diabetes, asthma, human immunodeficiency virus (HIV), suppressed immune system, and heart conditions.

### Illness severity

Determine the severity of the patient's condition, including the number of days since onset of illness. Compare the patient's present condition to the average case condition that would typically be expected at this current day of illness.

### Community Acuity

Maintain situational awareness of influenza illness in the community. Consider community prevalence, family exposure, and school or daycare exposure.

## ACTIONS

- Identify and record gaps in your hospital's current planning efforts related to Area 5 – Pandemic Influenza Pediatric Triage.

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- Describe the immediate next steps your facility needs to take to improve pediatric triage.

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- Describe the long-term steps your facility needs to take to improve pediatric triage.

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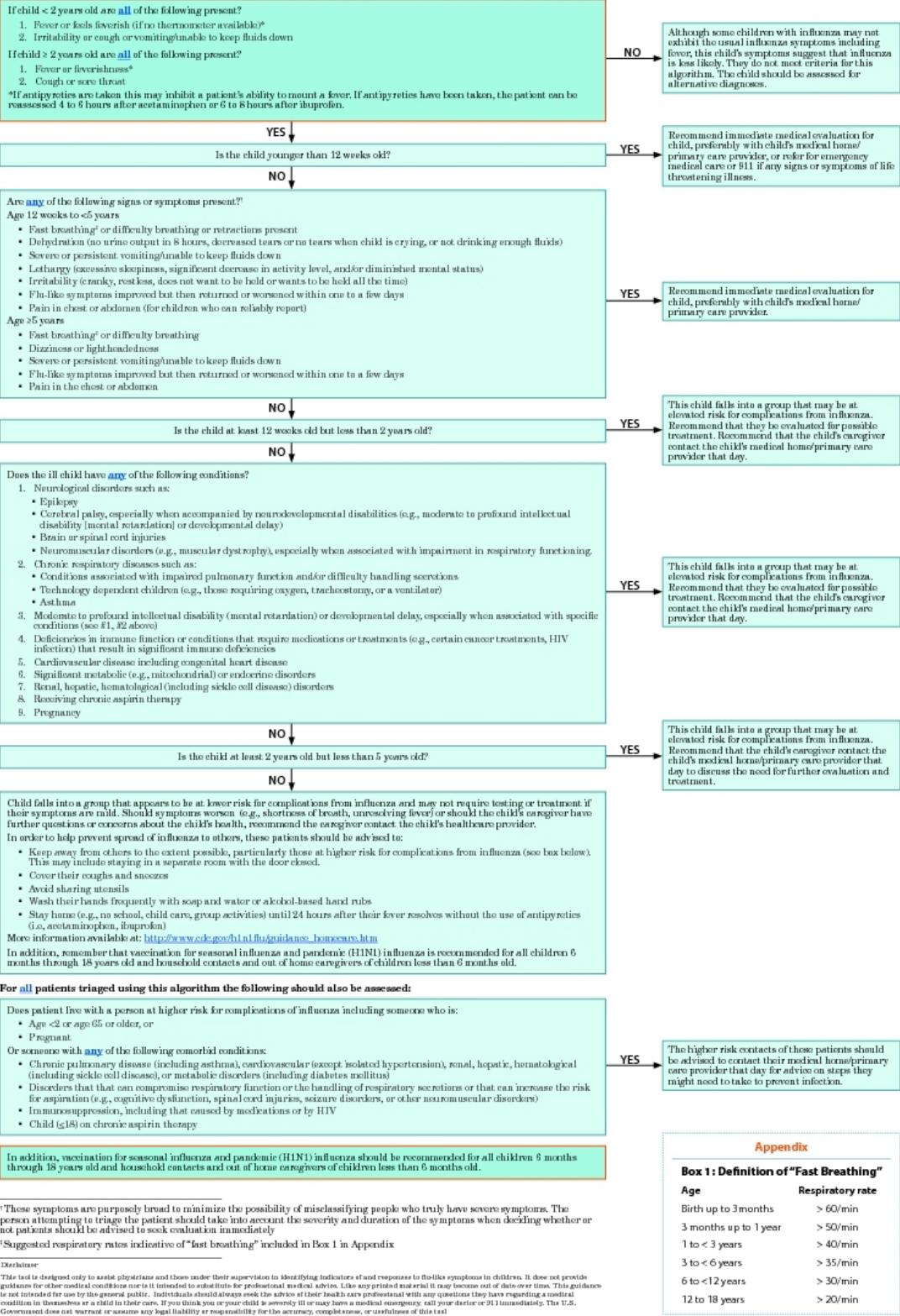
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CDC  
Centers for Disease Control and PreventionAmerican Academy  
of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN®

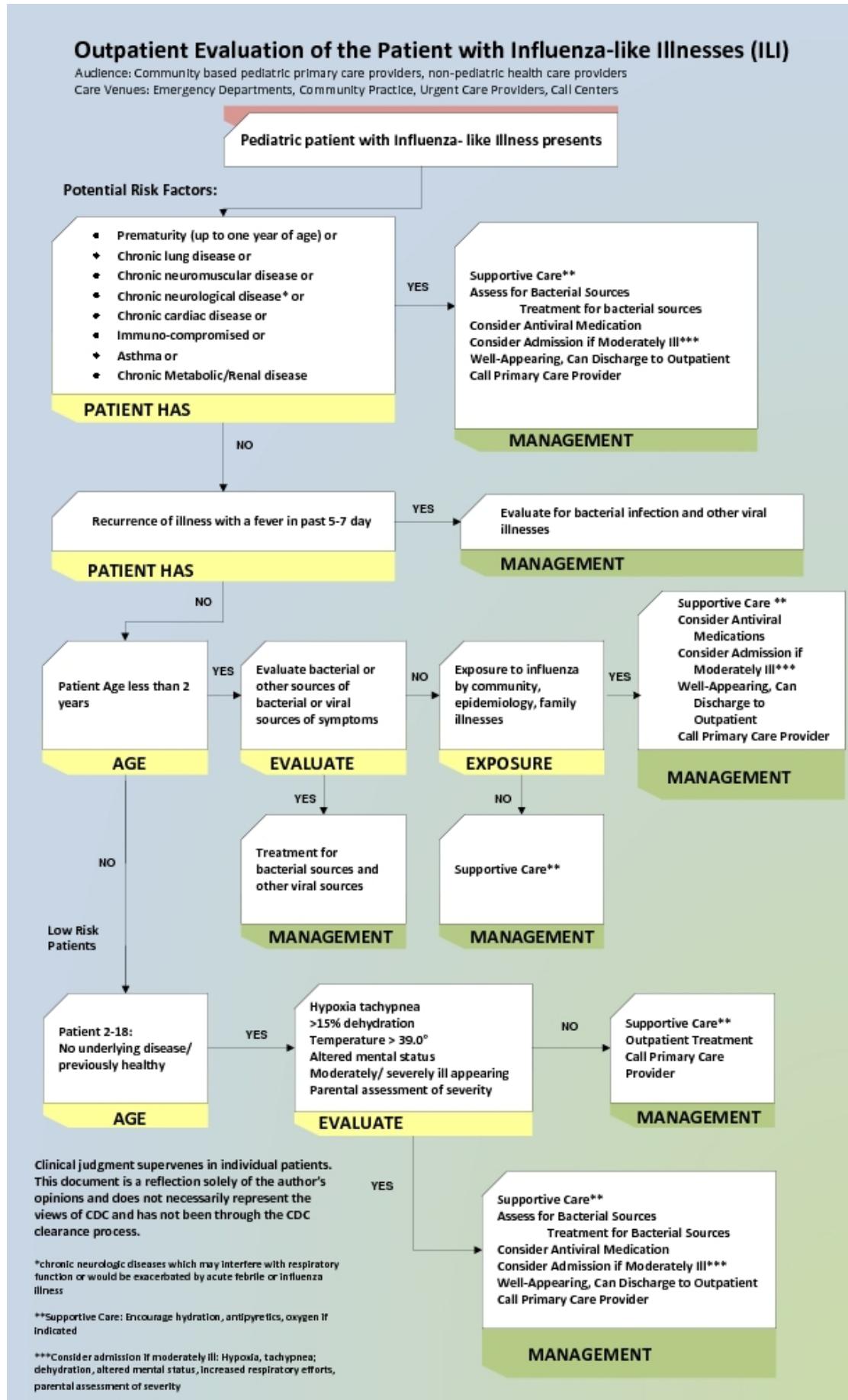
## 2009-2010 Influenza Season Triage Algorithm for Children (≤18 years) With Influenza-Like Illness

This algorithm was developed for use only by physicians and those under their direct supervision, not for use by general public, to help in discussions and providing advice to parents or other caregivers of ill children regarding seeking medical care for an influenza-like illness. The algorithm can be used regardless of whether or not the child has been vaccinated for influenza. Caregivers of children who may have potentially life threatening signs and symptoms, such as unresponsiveness, or respiratory distress and/or cyanosis (blue-colored skin), should be instructed to dial 911.



## Outpatient Evaluation of the Patient with Influenza-like Illnesses (ILI)

Audience: Community based pediatric primary care providers, non-pediatric health care providers  
 Care Venues: Emergency Departments, Community Practice, Urgent Care Providers, Call Centers



## APPENDIX A: ACRONYMS

AAP	American Academy of Pediatrics
AAFP	American Academy of Family Practitioners
ACEP	American College of Emergency Physicians
ED	Emergency Department
ESAR-VHP	Emergency System for Advance Registration of Volunteer Health Professionals
HHS	Department of Health and Human Services
ILI	Influenza-like Illness
IOM	Institute of Medicine
JIT	Just-in-Time (Training)
MRC	Medical Reserve Corps
PFCC	Patient- and Family-Centered Care
SME	Subject Matter Expert

## APPENDIX B: ACKNOWLEDGMENTS

This workbook could not have been produced without valuable input from the following stakeholders and subject matter experts:

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CDC, Office of the Chief Science Officer

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Children's Hospital Boston

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HHS, Assistant Secretary for Preparedness and Response

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Seattle Children's Hospital

Ramon Johnson, MD  
American College of Emergency Physicians

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Children's Memorial Hospital

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University of Texas Southwestern Medical Center

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CDC, Coordinating Center for Infectious Disease

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CDC, National Center on Birth Defects and Developmental Disabilities

Jeff Upperman, MD  
Children's Hospital Los Angeles

*The findings and conclusions in this document do not necessarily represent the official position of CDC or of the contributors to this workbook. This workbook is a compilation of suggestions and planning steps discussed by subject matter experts at the Pediatric Healthcare Response to Pandemic H1N1 Influenza Stakeholder Meeting. The resources cited in this workbook have been used by some of the SMEs in their own disaster planning processes prior to the meeting, and therefore are included as examples or suggestions for other hospitals. The inclusion of resources in this workbook does not imply CDC endorsement, nor does this workbook intend to be a comprehensive listing of all available disaster planning resources. The intention of this document is to aid hospitals in part of their influenza pandemic planning processes, which should include comprehensive research into available resources*

## APPENDIX C: REFERENCES

### General Hospital Focus

#### Area 2 – Assess Internal Pediatric Care Capabilities

American Academy of Pediatrics Committee on Pediatric Emergency Medicine, American College of Emergency Physicians Pediatric Committee, Emergency Nurses Association Pediatric Committee. Joint Policy Statement – Guidelines for Care of Children in the Emergency Department [online]. 2009. [cited 2009 Oct 25]. Available from URL: [http://www.annemergmed.com/article/S0196-0644\(09\)01435-8/fulltext](http://www.annemergmed.com/article/S0196-0644(09)01435-8/fulltext).

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#### Area 3 – Coordination with the Overall Community Pandemic Response

Medical Reserve Corps Program. Pandemic Influenza Planning Guidance for Medical Reserve Corps Units [online]. 2006. [cited 2009 Oct 25]. Available from URL: [http://www.medicalreserv корпус.gov/File/MRC\\_Pandemic\\_Influenza\\_Planning\\_Guidance.pdf](http://www.medicalreserv корпус.gov/File/MRC_Pandemic_Influenza_Planning_Guidance.pdf).

Medical Reserve Corps Program. Integration of the Medical Reserve Corps and the Emergency System for Advance Registration of Volunteer Health Professionals [online]. 2008. [cited 2009 Nov 1]. Available from URL: [http://www.medicalreserv корпус.gov/File/ESAR\\_VHP/ESAR-VHPMRCIntegrationFactSheet.pdf](http://www.medicalreserv корпус.gov/File/ESAR_VHP/ESAR-VHPMRCIntegrationFactSheet.pdf).

U.S. Department of Health and Human Services. Medical Surge Capacity and Capability: A Management System for Integrating Medical and Health Resources During Large-Scale Emergencies [online]. 2004. [cited 2009 Oct 2]. Available from URL: <http://www.hhs.gov/disasters/discussion/planners/mscc/mscc080626.pdf>

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#### Area 4 – Plan for Patient- and Family-Centered Care

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