

Patient Surge in Disasters:
A Hospital Toolkit for Expanding Resources in Emergencies

Bed Surge
Capacity Expansion Tool
(BSCET)

This publication was supported by Grant Number U3RHS07565 from the Health Resources and Services Administration. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of HRSA.

**All inquiries about the *Patient Surge in Disasters:
A Hospital Toolkit for Expanding Resources in Emergencies* may be addressed to:**

**William Lang, MS
c/o NYC Department of Health and Mental Hygiene
Office of Emergency Preparedness and Response
42-09 28th Street, 6th Floor CN-22E
Queens, NY 11101
Phone: (347) 396-2690
wlang1@health.nyc.gov**

Bed Surge Capacity Expansion Tool
Table of Contents

Guidance Document4

Summary Document - Planning 10

 Introduction and Overview 10

 Key Surge Planning Steps 11

 Organization Structure..... 12

Summary Document - Response21

 Introduction and Overview21

 Key Surge Response Steps22

 Implementation Structure23

Appendices29

 Introduction.....29

Appendix A30

 Surge Planning Master (SPM)30

Appendix B33

 Emergency Census Tool (ECT)33

Appendix C36

 Beds & Staffing Response Tool36

Appendix D42

 Facility Needs Assessment Guide & Checklist, and Expansion Catalog.....42

Appendix E46

 Equipment/Supply – Needs Assessment Guide & Planning Checklist46

Appendix F50

 Strategies & Tactics50

Appendix G57

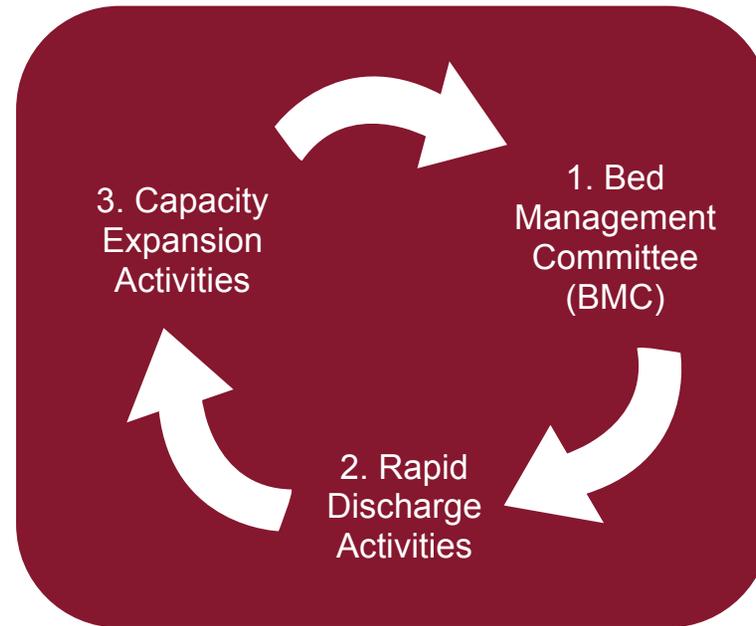
 Operational Procedures for Opening and Closing a Patient Care Unit.....57

Appendix H59

 Isolation Room Tool59



Bed Surge Capacity Expansion Tool Guidance Document



INTRODUCTION & OVERVIEW

In an emergency, discharging patients rapidly will likely be the fastest way to make more beds available to incoming patients. Depending on the incident's size and/or duration, your hospital may also need to consider expanding capacity in order to cope with incident-related patient volume. Generally, there are three areas of a hospital that will deliver the greatest number of additional, available acute care beds in the shortest possible time. The *Bed Surge Capacity Expansion Tool* (BSCET) planning and response activities and tools will assist the emergency planner in identifying, creating, staffing and supplying these surge beds.



PURPOSE

The *Bed Surge Capacity Expansion Tool* is designed to assist hospital administrators and emergency managers in preparing for and responding to unexpected increases in patient volume. The BSCET follows the *Rapid Discharge Tool* (RDT) in NYC DOHMH's *Patient Surge in Disasters: A Hospital Toolkit for Expanding Resources in Emergencies*.

OBJECTIVE

The objective of the BSCET is to identify opportunities for the creation of additional staffed and supported inpatient beds during the immediate and immediate-sustained phases of a mass casualty disaster (i.e., in the first 24 hours).

AUDIENCE

Because a mass casualty incident can occur at any time, the *Bed Surge Capacity Expansion Tool* offers a wide range of effective actions to increase surge capacity and may be especially useful to hospital staff members in the following areas:

- Incident Command Center
- Hospital Administration
- Admitting/Patient Access Services
- Nursing Administration
- Off-hours Administrator
- Emergency Management

GUIDELINES FOR USE

For purposes of emergency planning and response, be certain that the *Rapid Discharge Tool* census-gathering activities are fully implemented at your hospital as BSCET activities will both complement and run concurrent with RDT activities in the timeline of a public health emergency.



The *BSCET* is formatted as a quick reference guide for healthcare professionals. Each section of the tool is divided into columns which are defined as follows:

Action

An action is a set of planning or response activities that leads to a greater number of additional, available staffed beds.

Phase

A phase is the period of time during which emergency preparedness or response activities occur. *There are two hospital-specific phases in this tool:*

- *Planning:* the preparatory time prior to an emergency incident.
- *Response:* the time directly after the occurrence of a mass casualty incident when a hospital must immediately meet accelerated patient demand; and, the period directly following when patient volume continues to exceed a hospital's supply of beds.

Step(s)

Activities outlined within an **Action** that are intended to achieve one or more outcomes.

Outcome(s)

The result(s) of a team's conducting an Action's steps and activities. The benefits of each outcome are summarized in comments in the *Outcome(s)* column. We recommend reading these comments before undertaking the action to determine what shape these benefits may take in your hospital.

Estimated Resource Commitment

The *Estimated Resource Commitment* is an experience-based approximation of resources that will be required to complete an action. Depending on the type and amount of resources already in use, estimates will vary widely from one hospital to another. A simple graphic (), or a multiple thereof as shown below, is used to convey each action’s resource commitment potential:

	High level of resources required to complete action
	Medium-to-High level of resources required to complete action
	Medium level of resources required to complete action
	Low-to-Medium level of resources required to complete action
	Low level of resources required to complete action

Estimated Time Commitment

The *Estimated Time Commitment* is an experienced-based approximation of the time required to complete an action. Depending on the type and amount of resources already in use, time estimates will vary widely from one hospital to another. A simple graphic (), or a multiple thereof as shown below, is used to convey each action’s time commitment potential:

	High amount of time required to complete action
	Medium-to-High amount of time required to complete action
	Medium amount of time required to complete action
	Low-to-Medium amount of time required to complete action
	Low amount of time required to complete action



Bed Yield Potential (in Response Document only)

The *Yield Potential* is an experience-based estimate of how beds, staffing and supplies/equipment expansion may result from taking an action. A simple “high-medium-low” scale is used to quickly convey each action’s relative expansion capacity yielding potential:

- **HIGH**: increase in expansion capacity
- **MED**: increase in expansion capacity
- **LOW**: increase in bed expansion capacity

Notes:

- *Results will vary greatly from one hospital to another depending on such variables as institution size, census, staffing, patient case mix, available and/or obtainable resources, cross-functional cooperation, and implementation timeline.*
- *For many actions, substantial initial gains are often realized when response initiatives are first engaged. The yield potential of these actions is likely to decline in extended response.*

ABBREVIATIONS

See *Patient Surge in Disasters: A Hospital Toolkit for Expanding Resources in Emergencies – Introduction and References* for keyword and abbreviation explanations.

SUMMARY DOCUMENTS

Summary Documents are provided on pages 10 and 21 to preview the planning and response sections (respectively) of the BSCET.

APPENDICES

Beginning on page 29, appendices are attached to help surge capacity planners incorporate the planning and response components into their emergency plans (see BSCET Table of Contents, page 3).



AUTHORSHIP

Many of the actions contained in this tool were drawn from recommendations presented by the Surge Capacity Advisory Group, *Promising Practices and Recommendations for Hospitals for Bed Utilization and Personnel*, Parts I & II, MediSys Health Network/Continuum Health Partners CBPP, 2006.

Substantive editing of this work was performed by William Lang MS, an Administrative Consultant with an extensive background in hospital operations and emergency management.



Bed Surge Capacity Expansion Tool (BSCET) **Summary Document - Planning**

Introduction and Overview

In a mass casualty incident, there will likely be an immediate and sustained demand for additional, available beds. This demand is known as surge, and a hospital's ability to accommodate such an increase in patient volume is often referred to as surge capacity. The New York City Department of Health (NYC DOHMH) has determined that the two most effective methods for quickly increasing bed capacity are **rapid discharge** and **capacity expansion**. The latter is the primary subject of this document.

The Planning Document (pages 11-20) provides guidance on how to pre-organize teams in order to accomplish these critical activities most effectively; the Response Document (pages 22-28) offers a selection of steps that will accomplish desired capacity expansion outcomes. In both cases, all activity either derives from or reports to the *Bed Management Committee* (BMC) - a team of healthcare professionals who are expert in emergency management and knowledgeable about patient discharging and capacity expansion.

Census, staffing and facilities/equipment/supplies tools (and formulas) presented in the BSCET appendices should be carefully reviewed and customized to each hospital's specifications and requirements before use.



Bed Surge Capacity Expansion Tool Summary Document - Planning

Key Surge Planning Steps

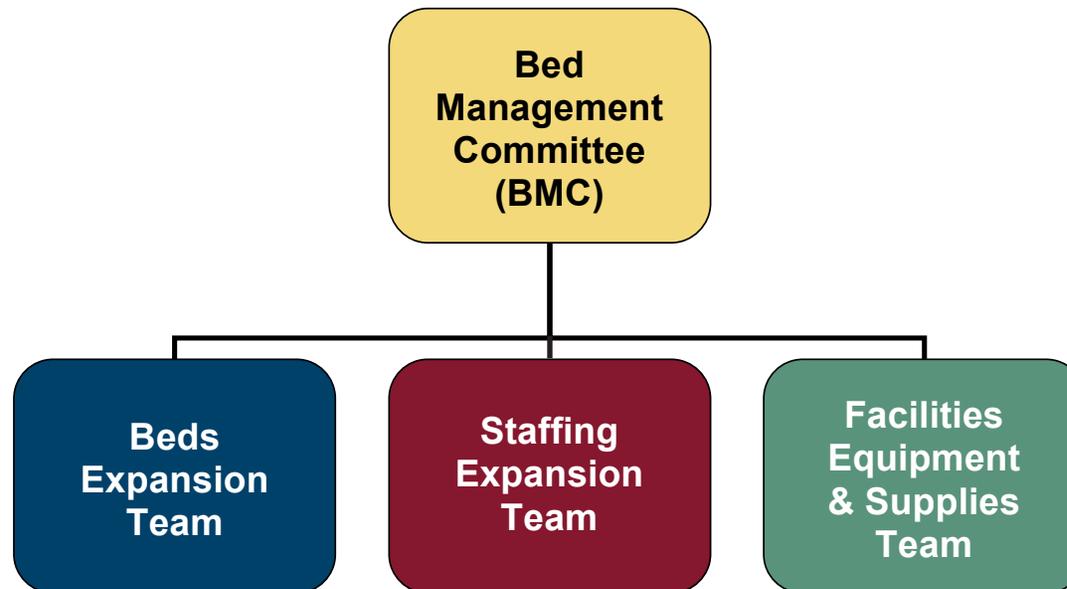
- 1) Organize **Bed Management Committee (BMC)** and **Rapid Discharge Tool (RDT)** activities.
- 2) Identify **Additional Bed Capacity Opportunities** in Clinical and Non-Clinical areas and create/update appropriate bed census planning and response tools
- 3) Determine **Staffing** needs for *Additional Capacity Beds*. Create/update staffing response tool with appropriate patient care staffing ratios and create/update staffing strategies and tactics response tool and checklist.
- 4) Assess and acquire **Facility** needs and requirements for *Additional Capacity Beds*. Create/update facility assessment tool for clinical and non-clinical areas.
- 5) Assess and acquire **Equipment & Supplies** needs and requirements for *Additional Capacity Beds*. Create/update equipment/supply planning and response tools for clinical and non-clinical areas.
- 6) Update hospital-specific **Policies & Procedures**. Incorporate BSCET **Strategies & Tactics** to maximize capacity expansion activity results.



Bed Surge Capacity Expansion Tool Summary Document - Planning

Organization Structure

BSCET work is overseen by the *Bed Management Committee* (BMC). The BMC's first task is to organize effective working teams to accomplish actions. The three 'Action' teams are shown in the diagram below. Each team is assigned the responsibility of producing a key element of the BSCET. The following pages will introduce the Planning functions of the *Bed Surge Capacity Expansion Tool*.





Action	Phase	Step(s)	Outcome(s)	Estimated Resource Commitment	Estimated Time Commitment
<p>⇒ Convene Bed Management Committee (BMC).</p> <hr/> <p>Bed Management Committee: A core group of clinical and administrative bed management experts. The BMC is charged with organizing and directing activities related to inpatient admissions, discharges and transfers in accordance with hospital policies and procedures. Membership expands according to emergent need, and includes Hospital Incident Command System (HICS) representatives. BMC leadership is provided by Nursing or Admitting, or both.</p> <hr/> <div style="border: 1px solid black; border-radius: 15px; background-color: #fff9c4; padding: 10px; text-align: center; width: fit-content; margin: 0 auto;"> <p>Bed Management Committee (BMC)</p> </div>	<p>Planning</p>	<p>1) Convene your hospital BMC. Rapid Discharge Tool (RDT), page 22, provides instructions in organizing a BMC.</p> <p>2) Review NYC DOHMH <i>Rapid Discharge Tool</i> (RDT). Include membership from staff and management in all pertinent patient activity areas and hospital operations.</p> <p>3) Develop, organize and coordinate activities as outlined in the RDT.</p>	<p>◇ BMC provides a means to:</p> <ul style="list-style-type: none"> ▪ Determine ongoing bed capacity potential by frequently monitoring all key patient activity areas. ▪ Recommend expanding bed capacity into existing clinical and non-clinical areas. ▪ Oversee and monitor expanded bed capacity. <p>◇ RDT Appendix A, page 21, provides step-by-step instruction for creating an effective BMC.</p> <p>◇ Engaging RDT activities will:</p> <ul style="list-style-type: none"> ▪ Yield maximum number of additional, available beds within operational capacity. ▪ Provide an accurate census (ongoing). ▪ Assure continued, optimized bed utilization. 	<p>👤 👤 👤 👤</p> <p>👤 👤</p> <p>👤 👤 👤 👤</p>	<p>🕒 🕒 🕒 🕒</p> <p>🕒 🕒</p> <p>🕒 🕒 🕒 🕒</p>



Action	Phase	Step(s)	Outcome(s)	Estimated Resource Commitment	Estimated Time Commitment
		<p>medical/ surgical beds in existing, non-traditional clinical areas.</p> <p>5. <u>Non-Clinical Expansion</u>: BET customizes the SPM by identifying and documenting additional medical/ surgical beds in existing, non-clinical areas.</p> <p>6. BET creates/updates <i>Hospital Emergency Census</i> with SPM data (census sample provided in BSCET Appendix B, page 33).</p> <p>7. BET opens and reviews <i>Response Tool</i> example provided in Appendix C, page 36.</p>	<ul style="list-style-type: none"> ▪ PACU ▪ Cardiac Cath Lab ▪ Amb/Surg ▪ Dialysis ▪ Respiratory Care ▪ Blood Donor Room ▪ Short Stay <p>◇ Additional beds may be created in non-traditional clinical areas such as:</p> <ul style="list-style-type: none"> ▪ Auditorium ▪ Cafeteria ▪ Chapel ▪ Offices ▪ Public space ▪ Waiting Rooms <p>◇ <i>Hospital Emergency Census</i> captures unit-level census during a surge incident. Data, including identified discharges, is transferred to hospital-specific <i>Response Tool</i>.</p> <p>◇ <i>Response Tool</i> calculates vacant beds in all pre-designated clinical and non-clinical areas.</p>	<p>♂ ♀</p> <p>♂ ♀</p> <p>♂ ♀</p>	<p>🕒 🕒</p> <p>🕒 🕒</p> <p>🕒 🕒</p>



Action	Phase	Step(s)	Outcome(s)	Estimated Resource Commitment	Estimated Time Commitment
		8. BET customizes the census portion of the <i>Response Tool</i> spreadsheet by entering SPM census data into corresponding columns of the <i>Response Tool</i> .	✧ <i>Response Tool</i> auto-calculates unit/area baseline and additional capacity columns to yield unit maximum capacities.		
		9. BET creates/updates <i>Hospital Emergency Capacity Expansion P&P(s)</i> , being certain to cover off-hours shifts. (see Operational Procedures for Opening & Closing a Patient Care Unit in Appendix G, page 57)	✧ Hospital Emergency Capacity Expansion P&P(s) help(s) to coordinate delivery of additional beds during a surge event by directing staff to take appropriate capacity expansion steps, including BSCET Response activities.		
		10. BET proposes (to BMC) incorporating all newly identified beds into hospital registration system as “phantom” or “virtual” beds.	✧ <i>Phantom Bed</i> (or similar) status in the registration system assures maximum use of available beds, including: <ul style="list-style-type: none"> ▪ Charge capture ▪ Delivery of ancillary services ▪ Accurate, real-time census reporting 		



Action	Phase	Step(s)	Outcome(s)	Estimated Resource Commitment	Estimated Time Commitment
		<p>5. SET enters RN-Extender/ Patient ratios in the <i>Response Tool</i>, and adjusts ratios in spreadsheet functions, as appropriate (see Appendix C, page 36, for examples and instruction).</p> <p>6. SET recommends (to BMC) creating/updating Hospital Emergency Staffing P&P(s) - (see Appendix F, page 50 for strategies and tactics).</p>	<p>◇ <i>Response Tool</i> auto-calculates the minimum number of RN-Extenders required based on maximum inpatient unit/area capacities.</p> <p>◇ <i>Hospital Emergency Staffing P&P(s)</i> help(s) to maximize patient care staffing resources during a surge event by providing guidance in altering staff/patient ratios and engaging appropriate strategies and tactics to retain existing and acquire additional staff.</p>	<p></p> <p></p>	<p></p> <p></p>



Action	Phase	Step(s)	Outcome(s)	Estimated Resource Commitment	Estimated Time Commitment
⇒ Create an Equipment / Supplies and Facilities Expansion Team (EST)	Planning	1. BMC creates and convenes an <i>Equipment/Supplies and Facilities Expansion Team (EST)</i> to assess and acquire facilities, equipment and supplies for additional capacity beds. Be certain to include in EST membership those staff that fill related HICS positions.	◇ Drawing on BMC’s multi-disciplinary membership, the EST organizes to oversee the identification and delivery of facilities, equipment and supply needs to bed capacity expansion areas.		
Equipment / Supplies and Facilities Expansion Team (EST): A team of healthcare professionals with expertise in hospital supply chain/procurement that is assigned the task of identifying, planning and implementing equipment/supplies and facilities for capacity expansion into clinical and non-clinical areas of the hospital.		2. EST defines Facility needs and requirements for expansion into clinical and non-clinical areas (see Appendix D, page 42, and Appendix F, page 50).	◇ Completed <i>Facility Expansion Assessment Matrix</i> , Appendix D, page 42, identifying areas for possible inpatient expansion.		
<div style="border: 1px solid black; border-radius: 15px; background-color: #4CAF50; color: white; padding: 10px; text-align: center; width: fit-content; margin: auto;"> Facilities Equip-Supply Expansion Team (EST) </div>		3. EST defines medical and logistical Equipment/Supply needs for expansion into identified clinical and non-clinical space (see Appendix E, page 46, and Appendix F, page 50).	◇ Completed <i>Equipment/Supply Response Tool</i> , Appendix E, page 46, featuring needs checklist and suggested strategies/ <u>traditional clinical space</u> .		
			◇ <i>Equipment/Supply Response Tool</i> , featuring needs checklist and suggested strategies/		



Action	Phase	Step(s)	Outcome(s)	Estimated Resource Commitment	Estimated Time Commitment
		<p>4. EST recommends (to BMC) creating/updating internal P&P(s) -see Appendix F, page 50 for strategies and tactics:</p> <ul style="list-style-type: none"> a. identification and creation of clinical and non-clinical area bed capacity expansion opportunities; and, b. provision of adequate equipment and supplies to newly expanded areas. 	<p>tactics for adding beds to <u>non-traditional clinical space</u>.</p> <p>✧ <i>Equipment/Supply Response Tool</i>, featuring needs checklist and suggested strategies/ tactics for adding beds to <u>non-clinical space</u>.</p> <p>✧ <i>Hospital Emergency Facility, Equipment & Supply P&P(s)</i> help(s) staff to be adequately provisioned in clinical and non-clinical areas during a surge event by providing guidance in accessing surge facilities, and acquiring necessary equipment and supplies for those areas.</p>	<p></p> <p></p>	<p></p> <p></p>



Bed Surge Capacity Expansion Tool (BSCET) **Summary Document - Response**

Introduction and Overview

Whereas the *Planning* section of the BSCET is concerned primarily with constructing an organizational structure around which teams can prepare and recommend key capacity expansion activities, the *Response* section deals with the actual implementation of those actions. In both cases, all activity either derives from or reports to the *Bed Management Committee* (BMC) - a team of healthcare professionals who are expert in emergency management and knowledgeable about patient discharging and capacity expansion.

Census, staffing and facilities/equipment/supplies tools (and formulas) presented in the BSCET appendices should be carefully reviewed and customized to each hospital's specifications and requirements before use.



Bed Surge Capacity Expansion Tool
Surge Response Steps

Key Surge Response Steps

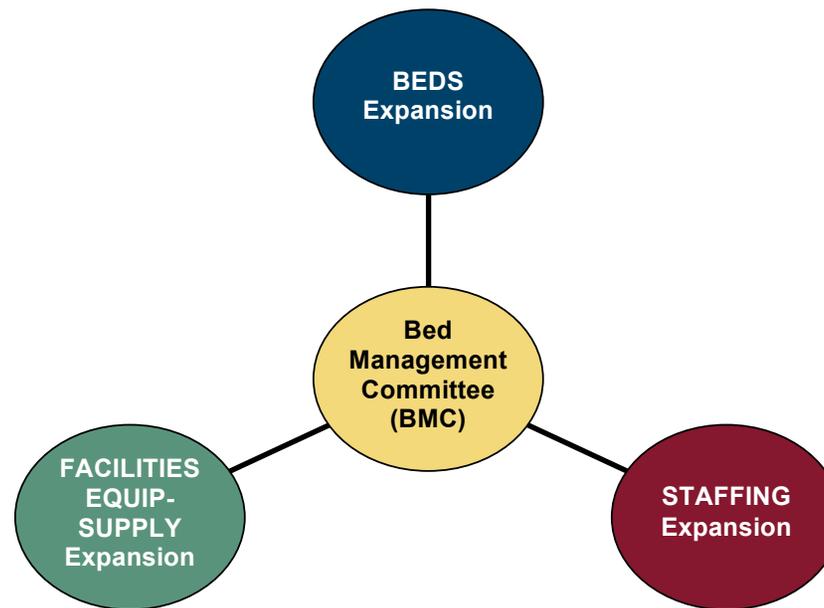
- 1) **Convene** Bed Management Committee (BMC).
- 2) **Assess** current and anticipated demand for inpatient beds.
- 3) **Activate** Rapid Discharge Plan (RDT).
- 4) **Aggregate and transfer** census and inpatient demand data from *Emergency Census Tool* to the *Response* tools to obtain bed vacancy profiles for all inpatient areas.
- 5) **Re-evaluate** inpatient bed needs.
- 6) **Implement** internal Bed Capacity Expansion P&Ps, as appropriate.
- 7) **Adjust** pre-defined RN and RN-Extender staffing ratios when and if required.
- 8) **Assess** current and anticipated patient care staffing needs.
- 9) **Implement** internal Staffing Capacity Expansion P&Ps, as appropriate.
- 10) **Assess** facilities preparedness of **needed** expansion areas.
- 11) **Implement** internal Facility Expansion P&Ps, as appropriate.
- 12) **Assess** Equipment & Supply needs using BSCET tools.
- 13) **Assure** timely delivery of Equipment & Supplies to expansion areas.
- 14) **Implement** internal Equipment & Supply Capacity Expansion P&Ps, as appropriate.
- 15) **Repeat** above steps as often as necessary.



Surge Capacity Expansion Tool Summary Document - Response

Implementation Structure

The following pages will introduce surge capacity planners to the Response functions of the Bed Surge Capacity Expansion Tool (BSCET).

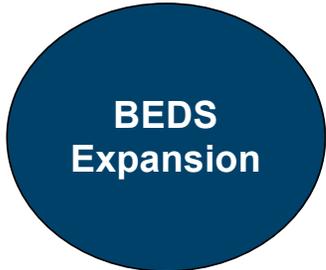


Note: The use of **N/A** in the *Bed Yield Potential* column indicates an administrative activity that does not measurably affect bed surge capacity *Step* in the response phase.



Action	Phase	Step(s)	Outcome(s)	Possible Team Members	Estimated Time Required	Resource Yield Potential
<p>⇒ Convene Bed Management Committee (BMC).</p> <div style="text-align: center; border: 1px solid black; border-radius: 50%; width: 150px; height: 150px; margin: 20px auto; background-color: #f0e68c;"> <p>Bed Management Committee (BMC)</p> </div>	Response	<ul style="list-style-type: none"> □ Convene Bed Management Committee (BMC) immediately and then again at beginning of each shift ongoing during incident – more often, if necessary. □ Invite representatives from all PCUs, ICUs, Operating Room, Emergency Dept, Nursing, Medicine, Admissions, and Environmental Services. □ Assess current and anticipated demand for inpatient beds by obtaining following info: <ul style="list-style-type: none"> ○ ED Holds ○ Scheduled Inpatient ORs ○ Direct Admits 	<ul style="list-style-type: none"> ◇ BMC will initiate and monitor all rapid discharge activity. ◇ A thorough, bed-by-bed review/update of inpatient bed utilization in all clinical and non-clinical areas. ◇ Provides emergency manager with accurate profile of current demands on vacant inpatient beds. ◇ Information will complete internal/external census reporting needs. 	<ul style="list-style-type: none"> ▪ Admitting ▪ Nursing ▪ Emer Dept ▪ Emer Mgmt ▪ Admin <p>(see Rapid Discharge Tool, Appendix A, page 21)</p>	1 Hour x3 times/day	<p>HIGH</p> <p>N/A</p> <p>HIGH</p>



Action	Phase	Step(s)	Outcome(s)	Possible Team Members	Estimated Time Required	Resource Yield Potential
⇒ Activate Bed Expansion Activities 	Response	<input type="checkbox"/> Organize Rapid Discharge activities (see RDT):	✧ Maximized yield of available, vacant beds.	<ul style="list-style-type: none"> ▪ Admitting ▪ Nursing 	up to 1 Hour - walk units	N/A
		<input type="checkbox"/> Acquire accurate data, using Emergency Census Tool	✧ Baseline census captured for existing inpatient units/areas.			up to 1 Hour - walk units
		<input type="checkbox"/> Monitor patient discharge activity, ongoing.	✧ Creates staff awareness of activity's importance ✧ Optimizes timely identification of available/vacant beds.		15 mins	MED
		<input type="checkbox"/> Transfer data from <i>Emergency Census Tool</i> to <i>Response Tool</i> .	✧ Auto calculates vacant beds.		15 mins	N/A
		<input type="checkbox"/> Re-evaluate inpatient beds needs.	✧ Ongoing accuracy for estimating inpatient bed needs.		8 hours +	N/A
		<input type="checkbox"/> Implement hospital emergency capacity expansion policy & procedure(s) to create additional inpatient beds. Refer to hospital-specific Emergency Operations Plan, and <i>Bed Expansion Strategies & Tactics</i> in Appendix F page 50.	✧ Specific step-by-step directions with detailed, hospital-specific suggestions, information and guidelines.			MED



Action	Phase	Step(s)	Outcome(s)	Possible Team Members	Estimated Time Required	Resource Yield Potential
<p>Activate Patient Care Staffing Expansion Activities</p> 	Response	<ul style="list-style-type: none"> □ Adjust pre-defined RN and RN-extender staffing ratios in the <i>Response Tool</i>, when/if required. See Appendix C, page 36. 	<ul style="list-style-type: none"> ◇ Accurate estimate of minimum staffing requirements adjusted to type of emergency. 	<ul style="list-style-type: none"> ▪ Nursing ▪ HR 	15 mins	MED
		<ul style="list-style-type: none"> □ Assess current and anticipated minimum patient care staffing needs using <i>Response Tool</i>. 	<ul style="list-style-type: none"> ◇ Auto-calculated minimum RN and RN-extender profiles, once ratios have been confirmed. 		15 mins	MED
		<ul style="list-style-type: none"> □ Implement hospital emergency capacity expansion P&P(s) to staff additional inpatient beds. Refer to hospital-specific Emergency Operations Plan, and <i>Staffing Expansion Strategies & Tactics</i> in Appendix F, page 50 as needed. 	<ul style="list-style-type: none"> ◇ Specific step-by-step directions with detailed, hospital-specific suggestions, information and guidelines. 		8 hours +	MED



Action	Phase	Step(s)	Outcome(s)	Possible Team Members	Estimated Time Required	Resource Yield Potential
<p>Activate Facility, Equipment & Supply Activities</p> 	<p>Response</p>	<p>□ Assess FACILITIES catalog (see Appendix D, page 42) for needed expansion areas.</p>	<p>◇ Selection of appropriate units/areas for surge capacity.</p>	<ul style="list-style-type: none"> ▪ Admitting ▪ Nursing ▪ Admin ▪ Engineering ▪ Purchasing ▪ Env Svcs ▪ Labs ▪ Pharm ▪ IP Transport 	2 hours	HIGH
		<p>□ Implement hospital emergency capacity expansion P&P to assure facilities preparedness and ongoing maintenance. Refer to hospital-specific Emergency Operations Plan and <i>Facility Expansion Strategies & Tactics</i> in Appendix F, page 50.</p>	<p>◇ Specific step-by-step directions with detailed, hospital-specific suggestions, information and guidelines to create additional inpatient beds in identified clinical and non-clinical units/areas.</p>		8 hours +	MED
		<p>□ Access EQUIPMENT & SUPPLIES according to facility expansion requirements/needs. Use provided tools in Appendix E, page 46.</p>	<p>◇ Equipment and Supplies lists include storage and retrieval information.</p>		8 hours +	MED
		<p>□ Implement hospital emergency capacity expansion P&P(s) to provide needed equipment/supplies to expansion areas. Refer to hospital-specific Emergency Operations Plan and</p>	<p>◇ Specific step-by-step directions with detailed, hospital-specific suggestions, information and guidelines to equip/supply additional inpatient beds in identified clinical and</p>		8 hours +	MED



Action	Phase	Step(s)	Outcome(s)	Possible Team Members	Estimated Time Required	Resource Yield Potential
		<i>Equipment/Supply – Needs Assessment Guide and Planning Checklist</i> in Appendix E, page 46. □ Assure continued timely delivery of equipment/supplies to expansion areas.	non-clinical units/areas. ✧ End-user confidence in continuous flow of equipment and supplies to expanded units/areas.		Ongoing	LOW
<p>Repeat Response steps as often as necessary</p>						



Bed Surge Capacity Expansion Tool

Appendices Introduction

OVERVIEW

Appendices are included in the Bed Surge Capacity Expansion Tool (BSCET) to help emergency managers complete the capacity expansion planning and response action steps with correlating tools and templates. Most of the documents contained in this section of the BSCET are customizable to hospital-specific needs. Appendix F offers numerous useful surge beds, staffing, facilities, equipment and supplies strategies and tactics for managers to consider using in their emergency plans.

APPENDICES DEFINED

Appendices A, B & C relate to beds and staffing capacity expansion. Appendix **A** is a planning exercise that asks you to develop a *Surge Planning Master*, a tool that will challenge you to explore inpatient capacity expansion possibilities in all units/areas of your hospital. This is followed by Appendix **B**, another planning exercise, which requires that you develop an *Emergency Census Tool* that will – during an emergency – capture the actual, ongoing census of all those areas defined in Appendix A. Finally, Appendix **C**'s *Response Tool* is the repository of actual census information, including confirmed discharges and additional beds. Once data have been entered into the Response Tool, it will yield both Vacant Beds and Minimum Patient Care Staffing recommendations (based on pre-approved staff/patient ratios). *It is recommended that these three appendices be completed in the order they are presented.*

Appendices D & E speak to the facilities, equipment and supply aspects of expanding inpatient capacity. Appendix **D** offers a core facility requirement checklist as well as a facility expansion catalog the planner can use to keep track of identified inpatient capacity expansion possibilities. Appendix **E** contains equipment and supply tools that will help to assess needs and keep track of inventory – including pharmaceuticals.

Appendix F, as noted above, provides emergency planners with surge capacity strategies and tactics that may be helpful in customizing their hospital-specific tools in managing sudden increased patient volume.

Appendix G & H (respectively) offer a sample policy and procedure for opening and closing a patient care unit, and an isolation capacity tool.



Bed Surge Capacity Expansion Tool
Appendix A
Surge Planning Master (SPM)

OBJECTIVE

In conjunction with the *Emergency Census Tool* (ECT) on page 33, and the *BSCET Response Tool* on page 36, the Surge Planning Master (SPM) will be used by the emergency planner to identify and record existing and potential, unit/area-level inpatient beds and maximum inpatient bed capacities in all clinical and non-clinical areas of the hospital.

COMPLETION STEPS**Surge 1: Traditional Clinical**

1. Request assistance from admitting and/or nursing in filling out the Surge 1 section of the SPM.
2. Identify and enter into the Surge 1 section of the SPM existing inpatient unit names/numbers, editing the form as necessary to conform to institutional requirements.
3. Enter operational census (average daily census) in the *Ops Cap* column for all Surge 1 units listed.
4. Identify potential for additional inpatient beds in all existing clinical areas (e.g., by adding beds to patient care unit rooms, hallways, and exam areas). Insert number of identified additional beds for all Surge 1 units listed in the *Add'l Cap* column. The SPM *Total* column will auto-calculate the *Ops Cap* and *Add'l Cap* columns to yield the *Total* possible number of beds per unit.
5. If appropriate to your hospital, list monitored cardiology beds separately (i.e., under Cardiology). This will help to identify monitored capacity when Surge 1 data are transferred to the *BSCET Response Tool*.

Surge 2: Non Traditional Clinical

6. Request assistance from admitting and/or nursing in filling out the Surge 2 section of the SPM.
7. Identify and enter into the Surge 2 section of the SPM existing non traditional units/areas that could be converted to inpatient usage, editing the form as necessary to conform to institutional requirements. Include



such places as OR Holding, Short Stay, Blood Bank, and the Cath Lab. See Appendix D, page 42, for facility expansion needs assessment and cataloguing tools.

8. Enter the maximum inpatient bed capacities for all Surge 2 units/areas in the column provided.
9. If applicable to your hospital, make a note of monitored beds in non-traditional clinical units/areas. This will help to identify monitored capacity when Surge 2 data are transferred to the BSCET *Response Tool*.

Surge 3: Non Clinical

10. Request assistance from admitting and/or nursing in filling out the Surge 3 section of the SPM.
11. Identify and enter into the Surge 3 section of the SPM potential non clinical areas that could be converted to inpatient usage, editing the form as necessary to conform to institutional requirements. Include such places as Waiting Areas, Cafeterias, and Permanently Closed Patient Care Units. See Appendix D, page 42, for facility expansion needs assessment and cataloguing tools.
12. Enter the maximum inpatient bed capacities for all Surge 3 areas in the column provided.

AIIR Beds

13. Refer to the AIIR BEDS section of the SPM:
 - Identify and enter all patient care units that have airborne infection isolation rooms (AIIR), and list room #'s next to each unit;
 - Calculate the number of AIIR beds for every unit, entering the totals in the *Beds* column.

Note: Isolation rooms are often interspersed among different units in different services, so it is recommended that a separate listing of AIIR beds be developed and maintained as a reference sheet for bed management and HERDS reporting purposes during emergencies (see Appendix H, page 59) for an isolation capacity worksheet template.

Working spreadsheets of all BSCET tools are downloadable at:
<http://www.nyc.gov/html/doh/html/em/emergency-surge.shtml>



EXAMPLE

SURGE PLANNING MASTER

Hospital Name:				Date:			
SURGE 1: TRADITIONAL CLINICAL				SURGE 2: NON TRADITIONAL CLINICAL			
Cardiology (Monitored)	Capacity	Surge	Total	Endoscopy	7		
7L	18	0	18	PACU	35		
7S	17	0	17	Cardiac Cath	8		
Total Cardiology Beds	35	0	35	Interventional Rad	4		
Med/Surg				OR Holding Area	6		
2L	36	4	40	Amb/Surg Unit	28		
3L	36	6	42	Dialysis	6		
4L	35	6	41	Respiratory Care	6		
4S	36	4	40	Blood Donor Room	6		
5L	36	3	39	Short Stay	6		
5S	36	5	41	Surge 2 Beds TOTAL	112		
Total Med/Surg Beds	215	28	243				
Critical Care				SURGE 3: NON CLINICAL			
3K	6	0	6	Offices	12		
4K	7	0	7	Main Auditorium	30		
5K	12	0	12	Clinics	22		
6K	8	0	8	Waiting Rooms	20		
6L	7	0	7	Waiting Areas	20		
Total Critical Care Beds	40	0	40	Public Space	10		
L&D/OB-Gyn				Permanently Closed PCUs	33		
2K	12	2	14	Chapel	7		
2S	11	2	13	Surge 3 Beds TOTAL	154		
3S	12	4	16				
Total L&D/OB-Gyn Beds	35	8	43				
Pediatrics				AIIR BEDS			
2M	17	2	19	Unit & Room Numbers	Beds		
3M	18	3	21	Unit 7L: #12, #13	2		
Total Pediatrics Beds	35	5	40	Unit 7S: #5	1		
Psych & Detox				Unit 2L: #3, #5, #6, #11, #14	5		
3P	35	4	39	Unit 5L: #2, #4, #5, #11	4		
4P	35	4	39	Unit 3K: #4	1		
Total Psych/Detox Beds	70	8	78	Unit 4K: #2, #3, #4, #6	4		
Rehab				Unit 5K: #2, #3, #4, #5, #6, #8	6		
1L	35	4	39	Unit 6L: #3, #4, #5	3		
Total Rehab Beds	35	4	39	Unit 2M: #3, #5, #7, #9	4		
SURGE 1 TOTALS (INPATIENT)	465	53	518	AIIR Beds TOTAL	30		
Surge 1 Beds TOTAL			518				

Surge 1 is the number of additional inpatient beds that can be added to a unit's "baseline" capacity

Capacity is also known as "average daily census". It is the usual number of staffed beds on a unit.

Critical Care Units will normally not have additional capacity, though this may vary with hospitals

Surge 2 is existing procedure and other clinical areas that can accommodate inpatients. This space is already "maximized" so there is no need for a Surge 1 column

Surge 3 areas are non clinical and have pre-defined inpatient maximum capacities so there is no need for a Surge 1 column

AIIR = Airborne Infection Isolation Rooms. Also known as "negative pressure", or simply "isolation" rooms

Important to capture this number for NYS HERDS Reporting



Bed Surge Capacity Expansion Tool

Appendix B

Emergency Census Tool (ECT)

OBJECTIVE

Because data accuracy is critical in managing bed surge capacity, an appropriate emergency census tool must be developed and maintained. Without a firm understanding of the status of all inpatient beds, the BMC will be unable to determine which capacity expansion activities can be employed most effectively to accommodate sudden increases in patient volume.

COMPLETION STEPS

The completed Surge Planning Master (SPM), Appendix A, page 30, presents an accurate unit-level snapshot of all inpatient capacity - existing and potential. As directed below, these identified SPM units and areas should be carried over to the *Emergency Census Tool* (ECT), along with their operational and additional capacities (this applies to Surge 1; note Surge levels 2 and 3 are already maximized).

Completing the ECT (as suggested), will enhance SPM information with vacant beds, potential discharges, rapid discharges, and transfers columns. Once compiled, ECT data are easily carried over to the BSCET *Response Tool* (see Appendix C, page 36). Note: Hospitals that participated in the DOHMH-sponsored Rapid Discharge Tool project will have already completed the ECT; however, a review of your current ECT is recommended as a few changes may be necessary to maintain data consistency with the BSCET Response Tool (e.g., by adding “*Add'l Cap*” and “*Max Cap*” columns in the Surge 1 section).



Surge 1: Traditional Clinical

1. Request assistance from admitting and/or nursing in filling out the ECT.
2. Using the template provided in Appendix B (page 33), your own emergency census tool, daily census and/or your Surge Planning Master (SPM) for reference, create an Emergency Census Tool (ECT) that will serve the emergency internal and external census data reporting needs of your hospital.
3. When customizing the ECT to your institution, be careful to keep data labels consistent among the various response tools as this will facilitate posting data from one to another.
4. Enter SPM traditional clinical service units and operational and additional capacity totals into corresponding columns and lines of the Surge 1 section of the Emergency Census Tool (ECT) on page 33. For example, place the SPM *Ops Cap* and *Add'l Cap* numbers into the ECT's *Ops Cap* and *Add'l Cap* columns.
5. Leave all other ECT columns blank.

Surge 2: Non Traditional Clinical

6. Enter SPM non-traditional clinical units/areas and totals into corresponding columns and lines of the Surge 2 section of the ECT (see page 33). For example, place the SPM unit/area capacity numbers into the ECT's *Ops Cap* column (the identified capacities in these areas will already be maximized).
7. Leave all other ECT columns blank.

Surge 3: Non Clinical

8. Enter SPM non-clinical areas and capacity totals into corresponding columns and lines of the Surge 3 section of the ECT (see page 33). For example, place the SPM unit/area capacity numbers into the ECT's *Ops Cap* column (the identified capacities in these areas will already be maximized).
9. Leave all other ECT columns/cells blank.



Bed Surge Capacity Expansion Tool
Appendix C
Beds & Staffing Response Tool

OBJECTIVE

The BSCET *Response Tool* will be used by the BMC in conjunction with the *Emergency Census Tool* to quickly identify medical and surgical service-level bed vacancies and minimum patient care staffing requirements during the initial 24 hours of a surge event.

Beds

Due to the impossibility of being able to accurately predict how patient surge will manifest, the critical first three shifts of a hypothetical incident have been chosen as a timeline framework for capacity expansion activities. These shifts are represented, respectively, by expansion into traditional clinical, non-traditional clinical and non-clinical areas. As each of these shifts represents inpatient bed surge into space that is not normally used in day-to-day hospital operations, the result is a gradual building of capacity until maximum levels are reached - at which time the *Response Tool* can be used ongoing to capture vacancy and staffing profiles for all inpatient bed capacity.

Staffing

All hospitals use some method to determine the number of Registered Nurses (RNs) needed to staff beds. These methodologies can be driven by a number of factors, such as acuity (hours per patient day), standards of practice (as defined by nursing specialty organizations), skill mix (ratio of RN's to nurse extenders), contractual obligations, average daily census, and methods of organization (flex time vs. standard 8 or 12 hour shifts). ***It is important that each hospital identifies the individual factors it utilizes and modifies the ratios used in the BSCET Response Tool to fit their own individual circumstances.*** Note that when approved and inserted into the Response Tool, hospital-specific ratios will automatically provide minimum RN and RN-Extender staffing requirements for the maximum inpatient capacities in each surge level.



TEMPLATE

A sample BSCET Response Tool template is provided below for your reference. Additionally, an actual spreadsheet of the material under review is downloadable at <http://www.nyc.gov/html/doh/html/em/emergency-surge.shtml> so that you can customize it to your institution's specific requirements.

FORMULA CALCULATIONS

Formulas used in the BSCET Response Tool for determining maximum bed capacity, bed vacancies and minimum RN and RN-Extender staffing requirements are as follows:

- Maximum Capacity (F) = Baseline (B) + Additional Capacity (E)
 - Vacant Beds (G) = Maximum Capacity (F) – Actual Census (C) + Rapid Discharges (D)
 - Minimum #RNs Required (I) = Maximum Capacity (F) / Maximum # Patients per RN (H)
 - Minimum # RN-Extenders Required (K) = Maximum Capacity (F) / Maximum # Beds per RN-Extender (J)
- ⇒ **BE AWARE:** To prevent fractions from appearing in the staffing portion of the Response Tool, the Excel function “CEILING” is used to round numbers up to the nearest significant number. To illustrate how this works, refer to the Surge 1 section of the *Response Tool* (page 41) and note there are 43 patients in the Maximum Capacity column for L&D/OB-Gyn. With the Maximum # of Patients per RN set at “20”, Excel returns a result of “3” as the Minimum # RNs Required to staff this service area when it is at Maximum Capacity. In this instance, Excel returns “3” as the Minimum # RNs Required at Maximum Capacity because it is rounding the result up to the nearest significant number.



COMPLETION STEPS:

Surge 1: Traditional Clinical

Planning

1. Refer to Surge Planning Master (SPM) on page 32 and enter traditional clinical service units and operational and additional capacity totals into corresponding columns of the BSCET *Response Tool*. For example, using the templates provided, post the SPM *Total Med/Surge Beds* “Ops Cap” of 215 to the BSCET *Response Tool’s Med Surge* “*Baseline (Ops Cap)*” column, and the SPM *Total Med/Surge Beds* “Add’l Cap” of 28 to the BSCET *Response Tool’s Med/Surge*, “*Additional Capacity*” column.

Response

2. Use your hospital *Emergency Census Tool* (ECT) in Appendix B, page 33, to update all Surge 1 units in the BSCET *Response Tool* with the following:
 - Ops Cap (operational capacity)
 - Add’l Cap (additional beds)
 - Vac (vacant beds)
 - RPDs (confirmed discharges)
 3. The following BSCET *Response Tool’s* Surge 1 columns will auto-calculate:
 - Vacant Beds
 - Min # Patients per RN
 - Min # Beds per RN-Extender
 - Monitored Beds in Traditional Clinical Space
 - Unmonitored Beds in Traditional Clinical Space²
- ⇒ Hospitals are encouraged to customize the staffing component of the BSCET Response Tool in advance with ratios that have been approved by senior administration. Note that in the provided template, RN staffing ratios are set at 20:1 for med/surg beds and 5:1 for critical care beds¹. Use ratios that are appropriate to your hospital.

¹ Development of Standards & Guidelines for Healthcare Surge During Emergencies, Tool for Calculating Bed Surge Capacity, California Department of Health Services, 2006



It is assumed that the additional, Surge 1 capacity beds will come on line during this first 8-hour period so census numbers in the “Additional Capacity” column have been used in the template example on page 41.

Surge 2: Non Traditional Clinical

Planning

4. Refer to Surge Planning Master (SPM) on page 32 and enter non traditional clinical units/areas and operational capacity totals into corresponding columns of the BSCET *Response Tool*. For instance, Endoscopy is listed as a non-traditional clinical unit/area with a total of 7 beds in the SPM. First enter Endoscopy in the Surge 2 section of the BSCET *Response Tool*, then add 7 beds to that tool’s “*Baseline (Ops Cap)*” column, while leaving the “0” in the *Additional Capacity* column (Surge 2 units/areas are likely already maximized).

Response

5. Use your hospital ECT to update all Surge 2 units/areas in the BSCET *Response Tool* with the following:
 - Ops Cap (operational capacity, already maximized)
 - Add'l Cap (additional capacity, only if applicable)
 - Vac (vacant beds)
 - RPDs (confirmed discharges)
6. The following BSCET *Response Tool*'s Surge 1 columns will auto-calculate:
 - a. Vacant Beds
 - b. Min # Patients per RN
 - c. Min # Beds per RN-Extender
 - d. Monitored Beds in Traditional Clinical Space, Non Traditional Clinical Space
 - e. Unmonitored Beds in Traditional Clinical Space², Non Traditional Clinical Space

⇒ Note: In the BSCET *Response Tool* template provided, Surge 2 beds show Ops Cap as “0” for all units/areas. It is assumed these beds will be prepared and not used during this shift; if this is not the case, then enter census data as appropriate.



Surge 3: Non Clinical

Planning

7. Refer to Surge Planning Master (SPM) on page 32 and enter non clinical areas and operational capacity totals into corresponding columns of the BSCET *Response Tool*. For instance, Auditorium is listed as a non-clinical area with a total of 30 beds in the SPM. First enter Auditorium in the Surge 3 section of the BSCET *Response Tool*, then add 30 beds to that tool's "*Baseline (Ops Cap)*" column, while leaving the "0" in the *Additional Capacity* column (Surge 3 areas are likely already maximized).

Response

8. Use your hospital ECT to update all Surge 3 areas in the BSCET *Response Tool* with the following:
 - Ops Cap (operational capacity, already maximized)
 - Add'l Cap (additional capacity, only if applicable)
 - Vac (vacant beds)
 - RPDs (confirmed discharges)
 9. The following BSCET *Response Tool*'s Surge 1 columns will auto-calculate:
 - a. Vacant Beds
 - b. Min # Patients per RN
 - c. Min # Beds per RN-Extender
 - d. Monitored Beds in Traditional Clinical Space, Non Traditional Clinical Space
 - e. Unmonitored Beds in Traditional Clinical Space², Non Traditional Clinical Space
- ⇒ Note: In the BSCET *Response Tool* template provided, Surge 3 beds show Ops Cap as "0" for all areas. It is assumed these beds will be prepared and not used during this shift; if this is not the case, then enter census data as appropriate.

EXAMPLE

RESPONSE TOOL

0 to 24 hours (and ongoing)

RN-Extender ratios presented here are based on Maximum Capacity (i.e., patient volume), providing greater support to RNs during a surge event

Name/Title:		Total number of Med/ Surge beds taken from Surge Planning Master's "Capacity" column					Date/Time:				
BEDS		Vacant Beds are auto-calculated by subtracting Actual Census from Maximum Capacity and then adding RPDs: =SUM(F8-C8)+(D8)					PATIENT CARE STAFFING				
	Baseline (Ops Cap)	Actual Census	RPDs	Additional Capacity		Maximum # of Patients per RN	Min # RNs Required at Maximum Capacity	Maximum # of Beds per RN-Extender	Min # RN-Extenders Required at Maximum Capacity		
	B	C	D	E	F	G	H	I	J	K	
SURGE 1 (0 - 8 hours)		RPDs = confirmed									
Med/Surg	215	231	23	28	243	35	20	13	18	14	
Cardiology	35	33	3	0	35	5	5	7	8	5	
Critical Care	40	38	4	0	40	6	5	8	5	8	
L&D/OB-Gyn	35	41	4	8	43	6	20	3	9	5	
Pediatrics	35	38	4	5	40	6	20	2	10	4	
Psych & Detox	70	74	7	8	78	11	20	4	12	7	
Rehab	35	37	4	4	39	6	20	2	7	6	
TOTALS	465	492	49	53	518	75		39		49	
	Monitored Beds in Trad Clin Space				75	11		15		13	
	Unmonitored Beds in Trad Clin Space				443			24		36	
SURGE 2 (8 - 16 hours)		At hospital's discretion, monitored beds may be tracked separately, as displayed here: =SUM(F9,F10)					RN/Patient ratios are set by hospital policy. In this case, "20" represents the number of Psych/Detox patients assigned to each RN				
Endoscopy	7				7			1	18	1	
PACU	35				35					7	
Cardiac Cath	8				8	8	5			2	
Interventional Rad	4				4	4	20			1	
OR Holding Area	6	0	0	0	6	6	5			2	
Amb/Surg Unit	28	0	0	0	28	28	5			6	
Dialysis	6	0	0	0	6	6	20			1	
Respiratory Care	6	0	0	0	6	6	20			1	
Blood Donor Room	6	0	0	0	6	6	20	1	18	1	
Short Stay	6	0	0	0	6	6	20	1	18	1	
TOTALS	112	0	0	0	112	112		23		13	
	Monitored Beds in Non-Trad Clin Space									8	
	Unmonitored Beds in Non-Trad Clin Space									5	
SURGE 3 (16 - x hours)		Additional Capacity column numbers are taken from the Surge Planning Master's "Surge" column. Mostly, these numbers apply to Surge 1 in the Response Tool, where existing capacity can be maximized to yield more beds					Minimum # of RN-Extenders is calculated by dividing Maximum Capacity by the service area ratio (in this case "18" Waiting Area patients per RN-Extender). CEILING function is used to round result up to nearest whole number: =CEILING(F37/18,1)				
Offices	12	0	0	0					18	1	
Auditorium	75	0	0	0					18	5	
Clinics	22	0	0	0	22	22	20	2	18	2	
Waiting Rooms	0	0	0	0	0	0	20	0	18	0	
Waiting Areas	12	0	0	0	12	12	20	4	18	1	
Public Space	0	0	0	0	0	0	20			0	
Perm close PCUs	33	0	0	0	33	33	20			2	
TOTALS	154	0	0	0	154	154		40		11	
	Unmonitored Beds in Non Clin Space				154	154					11
	TOTAL COMBINED Monitored Beds				152	88					21
	TOTAL COMBINED Unmonitored Beds				632	253					52
TOTAL BEDS					784						



Bed Surge Capacity Expansion Tool
Appendix D
Facility Needs Assessment Guide & Checklist, and Expansion Catalog

OVERVIEW & OBJECTIVE

Typically, there are two objectives for adapting non-traditional clinical and non-clinical space to inpatient usage; they are to:

1. Expand the services of the Emergency Department for the functions of adult and pediatric triage, treatment, or patient isolation; and,
2. Expand the in-patient space for the functions of adult and pediatric:
 - observation
 - medical/surgical
 - critical care
 - patient isolation

Appendix D presents the emergency manager with three facility assessment and planning tools designed to help hospitals prepare for sudden and unexpected expansion of inpatient capacity. These tools are:

- Facility Critical Needs Assessment Tool (Tool #1)
- Facility Planning Needs Checklist (Tool #2)
- Facility Expansion Catalog (Tool #3)

COMPLETION STEPS

1. Refer to and review the above tools, located on pages 44 and 45.
2. Use Tool #1 to select and assess the appropriateness of possible non-traditional clinical and non-clinical areas by referencing the potential inpatient expansion area's critical needs requirements. Planning considerations should take into account what level of patient care will be provided in the expansion area and if the space will be used for adult or pediatric patients.



3. Once you have determined the space meets the critical inpatient facility requirements, begin filling out Tool #2 by answering the following questions: *Unit/Expansion Area & Location, Maximum Inpatient Capacity, Name/Title of Assessor, and the Date.*
 4. Using the checklist of planning needs in Tool #2, the emergency manager will be able to determine the adequacy of the expansion area under review. The *Notes* column can be used to detail remedial work required to bring the area up to standard.
 5. Once any necessary work has been completed and the area has been approved for use in emergency inpatient expansion, carry the name and number of beds over to the appropriate Surge level in Tool #3 - the Facility Expansion Catalog. At this time, you can also check-off the intended use of the area in either the Adult or Pediatric In-Patient Expansion column (see page 45).
- ⇒ Note: Planners may wish to customize these forms, such as adding additional columns to the Facility Expansion Catalog to include 24/7 area access information, etc.



EXAMPLE

NYC DOHMH BED SURGE CAPACITY EXPANSION TOOL					
1. Facility Critical Needs Assessment Tool					
for Capacity Expansion into Non-Traditional & Non-Clinical Space					
	Observation	Medical	Critical	Isolation	Peds
Bathrooms	•	•	•	•	•
Emergency Power	•	•	•	•	•
HVAC	•	•	•	•	•
Medical Gases		•	•	•	•
Negative Pressure		•	•		•
Power Source	•	•	•	•	•
Sinks	•	•	•	•	•
Ventilators			•	•	•
Work Space	•	•	•	•	•
2. Facility Planning Needs Checklist					
for Capacity Expansion into Non-Traditional & Non-Clinical Space					
Unit / Expansion Area & Location:					
Maximum Inpatient Capacity:					
Name / Title of Assessor:				Date:	
	Adequate <input checked="" type="checkbox"/>	NOTES			
Able to Relocate Original Services	<input type="checkbox"/>				
Access to Clinical Labs Services	<input type="checkbox"/>				
Access to Radiology	<input type="checkbox"/>				
Adaptability/Conversion of Space	<input type="checkbox"/>				
Adequate Square Footage	<input type="checkbox"/>				
Bathrooms	<input type="checkbox"/>				
Easily Accessible	<input type="checkbox"/>				
Emergency Power	<input type="checkbox"/>				
HVAC Considerations / Isolation Issues	<input type="checkbox"/>				
Medical Gases	<input type="checkbox"/>				
Patient Access	<input type="checkbox"/>				
Power Source	<input type="checkbox"/>				
Proximity to Primary Space	<input type="checkbox"/>				
Sinks	<input type="checkbox"/>				
Utilities/Communications	<input type="checkbox"/>				
Ventilators	<input type="checkbox"/>				
Work Space	<input type="checkbox"/>				



EXAMPLE

NYC DOHMH BED SURGE CAPACITY EXPANSION TOOL									
3. Facility Expansion Catalog									
for Capacity Expansion into Non-Traditional & Non-Clinical Space									
		In-Patient Expansion							
		ADULT				PEDIATRIC			
		Adult				Pediatrics			
		Observation	Medical	Critical	Isolation	Observation	Medical	Critical	Isolation
Expansion Area	Number of Beds								
Surge 2 - Non Traditional Clinical Space									
Endoscopy	7								
PACU	35								
Cardiac Cath	8								
Interventional Rad	4								
OR Holding Area	6								
Amb/Surg Unit	28								
Dialysis	6								
Respiratory Care	6								
Blood Donor Room	6								
Short Stay	6								
TOTAL NON TRADITIONAL BEDS	112								
Surge 3 - Non Clinical Space									
Offices	12								
Auditoriums	75								
Clinics	22								
Waiting Rooms	0								
Waiting Areas	12								
Public Space	0								
Perm close PCUs	33								
TOTAL NON CLINICAL BEDS	154								



Bed Surge Capacity Expansion Tool
Appendix E
Equipment/Supply – Needs Assessment Guide & Planning Checklist

OBJECTIVE

Once selected, expansion units/areas will need to be equipped and supplied. Appendix E presents the emergency manager with three facility assessment and planning tools designed to help hospitals support newly created inpatient space with mostly medical equipment and supplies. These tools are:

- Equipment & Supply Needs Assessment Guide
- Equipment & Supply Checklist
- Pharmaceutical Cache

COMPLETION STEPS

1. Refer to and review the above tools, located on pages 47, 48 and 49.
2. Use the *Equipment & Supply Needs Assessment Guide* to determine what equipment and supplies are required to support the expansion area under review. Planning considerations should take into account what level of patient care will be provided in the expansion area and if the space will be used for adult or pediatric patients.
3. Once the equipment and supply needs have been assessed, proceed to the *Equipment & Supply Checklist*. Begin filling out this document by answering the following questions: *Unit/Expansion Area & Location, Maximum Inpatient Capacity, Name/Title of Assessor, and the Date.*
4. The *Equipment and Supply Checklist* mirrors the items found in the *Assessment Guide*, adding columns for quantity, storage location, and access information. Complete this form for each expansion area identified.
5. Finally, refer to and complete the *Pharmaceutical Cache* tool on page 49. Customize this form as appropriate to your hospital's needs.



EXAMPLE

NYC DOHMH BED SURGE CAPACITY EXPANSION TOOL						
1. Equipment & Supply Needs Assessment Guide						
for Capacity Expansion into Non-Traditional and Non-Clinical Space						
	Observation	Medical	Critical	Isolation	Peds	Peds Critical
BP Machines	•	•	•	•	•	•
Cardiac Monitors - Portable/Adult	•	•	•	•	•	•
Cardiac Monitors - Port/Peds	•	•	•	•	•	•
Communication Equipment	•	•	•	•	•	•
Crash Cart	•	•	•	•	•	•
Cribs	•	•	•	•	•	•
Dialysis Machines - Fixed	available in hospital					
Documents	•	•	•	•	•	•
Food Refrigerators	•	•	•	•	•	•
Hand Cleaner	•	•	•	•	•	•
HEPA Unit - Portable	available in hospital					
Infusion Pumps	•	•	•	•	•	•
IV Poles / Pumps	•	•	•	•	•	•
Linens (Clean & Soiled)	•	•	•	•	•	•
Medication Refrigerators	•	•	•	•	•	•
PCA Pumps	•	•	•	•	•	•
Patient Gowns	•	•	•	•	•	•
Personal Protective Equip. (PPE)	•	•	•	•	•	•
Pharmaceuticals	•	•	•	•	•	•
Portable O ₂	•	•	•	•	•	•
Portable Suction	•	•	•	•	•	•
Portable X-ray	available in hospital					
Regulated Waste Container	•	•	•	•	•	•
Sharps Container	•	•	•	•	•	•
Slit Lamp	available in hospital					
Stretchers	•	•	•	•	•	•
Supply Carts	•	•	•	•	•	•
Telemetry Boxes	available in hospital					
Temperature	•	•	•	•	•	•
Ventilators - Portable/Adult	available in hospital					
Ventilators - Portable/Pediatric	available in hospital					
Wheelchairs	•	•	•	•	•	•



EXAMPLE

NYC DOHMH BED SURGE CAPACITY EXPANSION TOOL					
2. Equipment & Supply Checklist					
for Capacity Expansion into Non-Traditional & Non-Clinical Space					
Unit / Expansion Area & Location:					
Maximum Inpatient Capacity:					
Name / Title of Assessor:					Date:
	Adequate <input checked="" type="checkbox"/>	Quantity	Storage Location	Access Info	
BP Machines	<input type="checkbox"/>				
Cardiac Monitors - Portable/Adult	<input type="checkbox"/>				
Cardiac Monitors - Portable/Peds	<input type="checkbox"/>				
Communication Equipment	<input type="checkbox"/>				
Crash Cart	<input type="checkbox"/>				
Cribs	<input type="checkbox"/>				
Dialysis Machines	<input type="checkbox"/>				
Documents	<input type="checkbox"/>				
Food Refrigerators	<input type="checkbox"/>				
Hand Cleaner	<input type="checkbox"/>				
HEPA Unit - Portable	<input type="checkbox"/>				
Infusion Pumps	<input type="checkbox"/>				
IV Poles / Pumps	<input type="checkbox"/>				
Linens (Clean & Soiled)	<input type="checkbox"/>				
Medication Refrigerators	<input type="checkbox"/>				
Patient Gowns	<input type="checkbox"/>				
PCA Pumps	<input type="checkbox"/>				
Peritoneal Dialysis Kits	<input type="checkbox"/>				
Personal Protective Equipment (PPE)	<input type="checkbox"/>				
Pharmaceuticals	<input type="checkbox"/>				
Portable O ₂	<input type="checkbox"/>				
Portable Suction	<input type="checkbox"/>				
Portable X-ray	<input type="checkbox"/>				
Pulse Oximeter	<input type="checkbox"/>				
Regulated Waste Container	<input type="checkbox"/>				
Sharps Container	<input type="checkbox"/>				
Slit Lamp	<input type="checkbox"/>				
Stretchers	<input type="checkbox"/>				
Supply Carts	<input type="checkbox"/>				
Telemetry Boxes	<input type="checkbox"/>				
Temperature	<input type="checkbox"/>				
Ventilators - Portable/Adult	<input type="checkbox"/>				
Ventilators - Portable/Peds	<input type="checkbox"/>				
Wheelchairs	<input type="checkbox"/>				

Bold/Italics items are generally "available in hospital" - not unit/area specific



EXAMPLE

NYC DOHMH BED SURGE CAPACITY EXPANSION TOOL					
PHARMACEUTICAL CACHE					
for Inpatients, Hospital Personnel, Medical Staff and Family Members					
Date:					
Location:					
24/7 Contact Info:					
BIOLOGICAL PREPAREDNESS					
ITEM	STRENGTH	FORM	PAR	CURRENT	NOTES
Amoxicillin	200 mg	oral			
Amoxicillin	500 mg	oral			
Ciprofloxacin	500 mg	oral			
Ciprofloxacin	250 mg	oral			
Ciprofloxacin	400 mg	IV			
Doxycycline	100 mg	oral			
Doxycycline	100 mg	IV			
Levofloxacin	500 mg	oral			
Moxifloxacin	500 mg	oral			
CHEMICAL / RADIATION PREPAREDNESS					
ITEM	STRENGTH	FORM	PAR	CURRENT	NOTES
Amyl Nitrate	0.3 ml				
Amyl Nitrate	12 asperols				
Atropine	10 mg/ml	vials			
Atropine	8 mg/ml	vials			
Atropine		syringes			
BAL (Dimercaprol)	3 ml	ampule			
Cidofovir					
Cyanide Kits	375 mg				
Lorazepam	2 mg/ml				
Lorazepam	4 mg/ml				
Lorazepam		tubes			
Lugols Solution	473 ml				
Mark I		Injectors			
Pralidoxime chloride	1 gm	vials			
Sodium Nitrite	300 mg	IV			
Sodium Thiosulfite	12.5 gm	IV			
Succimer	100 mg	oral			
Vanceril Inhalers					



Bed Surge Capacity Expansion Tool
Appendix F
Strategies & Tactics

INTRODUCTION

Inpatient capacity has been declining for many years as hospitals aggressively seek to reduce length of stay while closely monitoring bed utilization. These initiatives often give rise to increased census levels and longer patient wait times. Consequently, hospitals have become well accustomed to employing numerous strategies and tactics in order to better cope with unexpected and sporadically high patient volume. The following recommendations derive from work submitted by New York City “Centers for Bioterrorism Preparedness Planning (CBPP)” and speak to the challenges of increasing beds, staffing and facility/supplies capacities on sudden notice. Emergency planners are invited to incorporate any recommendations that suit their hospital-specific needs into their capacity planning and response tools.

OBJECTIVE

To provide emergency planners with surge capacity strategies and tactics that may be helpful in customizing their hospital-specific tools for managing sudden increased patient volume.

BEDS

Recommendations

- Engage Rapid Discharge Tool (RDT) activities repeatedly throughout disaster in order to maximize bed utilization.
- Once capacity expansion beds have been identified and entered into hospital registration system, notify all appropriate departments/units of the new locations.
- Establish patient volume thresholds and a mechanism to notify key individuals when these thresholds are reached. Examples of thresholds could include % capacity of patient beds occupied, # of assigned but unbedded patients in the ED, # of ICU beds available.



- Develop a “Rapid Report Checklist” for beds, staffing, and equipment for each existing and expansion inpatient area. List would serve as a regular status update to emergency operations center.
- Develop a “Rapid Acceptance” policy for ED-admitted patients.
- Develop standardized admissions orders to facilitate admissions.
- Gather all available stretchers and patient chairs that are not being used and stage them in a readily accessible location. Inquire about beds, stretchers and patient chairs that may be off the floors for routine maintenance.
- Consider utilization of existing recliners in patient rooms (as opposed to regular chairs).
- Consider stockpiling ‘alternative hospital beds’, with pre-approval from regulatory agencies (e.g., NYS DOH).
- Develop a patient discharge area (lounge) for patients who are ready for discharge but are logistically unable to leave the facility. Consider staffing this lounge with a Social Worker or Registered Nurse.
- Emergency Medicine Chairperson (or designee) shall direct ED clinical staff to assess if ED patients need to occupy a stretcher during their stay (if not, that ED patient can safely receive care in a treatment chair and the stretcher released to a more appropriate patient).
- Consider using folding cots for staff housing.
- Establish disaster linen cart in a secure area with a par level at 100% house capacity. If cost is an issue, negotiate with linen services supplier to stock this cart with sub-optimal linen.
- Develop a memorandum of understanding (MOU) with linen services supplier to guarantee timely delivery of sufficient supplies during a disaster. Adjust amount upwards if surge beds are being used for patients, and cots for staff.
- Consider changing linen usage practices to conserve linen supplies (for example, alternating use of top and bottom sheets).
- Consider developing a Surge Capacity Infection Control policy that allows patients with like-infectious conditions to be cohorted in the same location, thereby freeing up individual isolation room availability.
- Develop a policy that disallows service-to-service patient transfers for the disaster’s duration.



PATIENT CARE STAFFING (RNs & RN-Extenders)

Introduction

Acquiring and retaining patient care staff during a public health emergency will almost certainly be one of the emergency manager's greatest challenges. According to at least one respected employee attitudinal survey^{2,3}, "Many employees are unwilling to report to duty during a disaster because of fear and concern for the safety of their families and themselves.³ Data suggests that purposeful absenteeism is expected to increase during a severe flu pandemic to more than 40 percent,⁴ and in the event of a mass exposure, one-fourth to one-third of the workforce may be deliberately absent for a period of time." The following staff capacity building strategies and tactics are therefore presented to create awareness and to provide suggestions for maximizing patient care staffing during an emergency situation:

Patient Care Staff - Acquisition

- Build and maintain a personnel inventory, including:
 - licensure validation
 - skill set(s) tracking
 - time away from patient care (i.e., nursing administrators)
 - pre-determined deployment
- Provide regular staff training in emergency preparedness
- Offer housing for family members
- Offer financial incentives
- Offer transportation to/from work
- Pre-match emergency job assignments to specific skill set(s)
- Use the "buddy system" for on-the-job training.

² National Association of Public Hospitals and Health Systems, Research Brief, "Hospital Staffing and Surge Capacity During a Disaster Event," May 2007

³ Steven Reinberg, "Many Health Care Workers Won't Show Up in Flu Pandemic Poll results a 'wake-up call' for better preparedness training, experts say." HealthDay News. See: www.healthfinder.gov/news/printnewsstory.asp?docID=532153.

⁴ Ibid



- Identify the types of nurse extenders your hospital utilizes, including their specific patient care responsibilities.
- Maintain patient safety and proper infection control practices (i.e., controlling outbreak of nosocomial⁵ infections) by maintaining baseline *nurse extender to bed ratios* (this is done automatically in the BSCET Response Tool once ratios have been inserted).
- Identify and track all hospital employees that may be asked in a time of crisis to function in the role of *nurse extender*.
- Become familiar with the *Response Tool* by creating likely emergency scenarios in order to identify RN and RN-Extender staffing ratios. This will yield actual minimum staffing numbers based on maximum patient capacities.
- Develop and implement methods to keep non-practicing patient care staff “serviceable”.
- Consider utilizing family members as nurse-extendors for such functions as feeding, assistance to bathroom, bathing, etc.

Patient Care Staff – Retention

- Provide:
 - daycare for employees’ children
 - care for employees’ pets
 - care for staffs’ elderly relatives
 - medication supplies for workers and their families
 - food and clean/safe housing

Patient Care Staff - Miscellaneous

- Pair volunteers or crossed-trained staff with existing bed-cleaning personnel to improve bed turnaround times. Note that compliance with infection control standards must be assured and the supervision of these personnel would be dependent on institutional policy.
- Review policies regarding the automatic renewal of unchanged critical care orders (with the exception of controlled substances, restraints, and those orders that would no longer apply to the patient’s condition). Clinical personnel would then be more available to provide patient care to the increased volume of patients.



- Establish unidirectional patient flow through the facility. For example, once a patient leaves the ED for a study, the patient should continue to move to her ultimate destination.

Staff Notification

Introduction

Rapid notification systems are essential for communicating activation of disaster plans. Hospitals should consider how to notify staff rapidly and include specific procedures for reaching off-duty staff. Many hospitals have systems in place for alerting on-duty staff of disaster plan activation. The challenge is in reaching off-duty staff.

Recommendations for enhancing notification systems include:

- Routine updating of emergency contact information for all staff, which can be done on multiple levels. It is not necessary to maintain a single database for this information; rather, each department can maintain its own lists.
- Computer generated notification systems. There are numerous companies offering automated notification systems. While these systems can offer viable communication solutions, they can also be very costly.
- Creation of a call-in Disaster Hotline for off-duty employees
- Use of Pagers, and/or cellular phones to send text messages through automated systems
- Telephone tree(s) – creation of a calling cascade within departments
- Third party contact services

Taking Care of Staff

Introduction

It is critical to the success of a sustained response to have mechanisms in place for staff surveillance that identify stress points and fatigue levels. It is equally important that the group tasked with this responsibility have the authority to “relieve” staff when they have reached critical fatigue levels. Hospitals should therefore consider creating a mental health support team for the purpose of surveillance and pre-disaster education.



Recommendations

- Create a Mental Health Surveillance team
- Create a staff support center. Assure that this area does not get used for other purposes
- Assure 2-3 hour breaks (when possible), as well as pre-determining the number hours before change is mandated
- Every effort should be made/maintained to provide relief at the scheduled end of everyone's change of tour
- Prepare for utilizing "fixed number of employees" over a protracted period of time
- Provide, whenever possible, a minimum of eight hours off before requiring return to duty

FACILITIES

- Consider participating in hospital construction projects to take advantage of opportunities that may present when developing or renovating hospital space.
- Recently decommissioned inpatient units may offer an opportunity to expand into space that can may still be considered "clinical". However, aged units that have been stripped of beds and furnishings and that have had their medical gas and vacuum shut down may need to be regarded as non-clinical space.
- Engaging the services of your project planning team to develop overlays of the existing space footprint will help maximize space utilization and assist in the phasing of required mechanical improvements that may be required to create a space capable of supporting the patient care function. It may be necessary to make permanent modifications to the non-traditional space in order to make it more suitable for conversion – these may include emergency power, HVAC, and/or the installation of medical gases.
- Care should be taken to include generator-supplied outlets.



EQUIPMENT & SUPPLIES

Methodology to Identify Equipment & Supplies in Non-Traditional Space

- When converting non-traditional space to inpatient usage, careful preplanning is necessary to ensure the newly created space is adequately outfitted with the requisite equipment and supplies. The following methodology can be used for guidance:
 1. Assess the equipment and supply needs by each type of clinical function the space has been determined to be suitable to provide, and the numbers of patients that the space can hold for each function (note some clinical functions may inherently have different space requirements per patient). The needs assessment should take into account the ability to sustain providing the clinical function in the space for a protracted time period.
 2. Identify any existing equipment and supply resources that are already available in the space. Make sure to assess whether these resources will be removed by the function that is being displaced.
 3. Determine the potential sources of necessary equipment and supplies:
 - a. Operational inventory
 - b. Disaster stockpile
 - c. Memorandum of Understanding with suppliers/partners (delayed delivery)

Prepare Space to Become Operational

- The decision to occupy non-clinical space will take time to execute and will need to have built-in decanting and relocation plans for services that are displaced during the disaster. This is a critical consideration if displaced services have the potential to impact business continuity.
- Include in your planning, a response plan for the removal of existing office furniture and supplies and the deployment of requisite equipment and supplies identified for the care of patients.
- As mentioned elsewhere in this document, inclusion in the bed matrix to assure delivery of ancillary patient care services and charge tracking are imperative.

Miscellaneous

- Equipment and supply par levels must be developed for identified capacity expansion areas, either to supplement current supplies that are routinely utilized in the area, or as separate lists.
- Consider using generic, fully-stocked disaster carts for use at any location throughout the facility.



Bed Surge Capacity Expansion Tool
Appendix G
Operational Procedures for Opening and Closing a Patient Care Unit

INTRODUCTION

Whether the priority is “clearing out the ED” on a busy day, or making way for incoming victims following a disaster, a step-by-step plan will organize the opening of a closed patient care unit or expand inpatient capacity into non traditional space. The example offered below was written by a local (NYC) hospital for their emergency plan.

OBJECTIVE

To identify the action components necessary to open a patient care unit.

COMPLETION STEPS

1. Notify the following Departments of Unit/Area Opening:

- Verify opening date/time with Bed Coordinator and unit Nurse Manager, Director, Vice President and Chief Operating Officer
- Notify Staffing Office; negotiate patient care and administrative staffing
- Plan patient transfers to unit with the admitting office and other members of the unit reopening team
- Contact admitting “bed board” (ext. XXXX) to notify of additional beds for patient placement
- Determine which patients will be place on open unit
- Page Operator (ext. XXXX)
- Unit-based Pharmacist (ext. XXXX)
- Central Pharmacy (ext. XXXX)
- Central Services (ext. XXXX); arrange delivery time for the opening unit’s supply carts
- Security (ext. XXXX)



- Laundry (ext. XXXX)
- Building Services: Weekdays (ext. XXXX), Weekends (ext. XXXX)
- Dietary Office (ext. XXXX); fax room numbers for patients transferred to new unit
- Contact the Fellow(s) on-call for services that will admit to the opened unit
- Contact all doctors with patients being placed on the newly opened unit

2. Procedure for Opening a Unit:

- Unlock all patient care rooms, cupboards and other rooms necessary to provide patient care
- Patients' charts should be available for use on the unit
- Assure proper equipment and supplies are available on the patient care unit
- Ensure the newly opened beds show "available" in the ADT systems. Turn on all computers and printers
- Place automatic blood pressure machines, thermometers, emergency carts, defibrillator and other patient care equipment in the appropriate places on the patient care unit
- Ensure medicine carts are delivered and properly stocked for patient care, including narcotics
- Stock the nursing station, including telephones, handsets, necessary forms, etc.
- Perform final "walk through" with Guest Services to identify any remaining housekeeping and/or maintenance issues
- Place sign at the nursing station indicating unit has been opened



Bed Surge Capacity Expansion Tool

Appendix H

Isolation Room Tool

INTRODUCTION

In many hospitals, airborne infection isolation rooms (AIIR) are often interspersed among different units in different services, so it is recommended that a separate listing of these “isolation” beds be developed and maintained as a reference sheet for bed management and HERDS reporting purposes during emergencies.

OBJECTIVE

To provide hospitals with a sample “Isolation Room” tool that will assist them in accurately identifying – ongoing during and emergency – their isolation capacity.

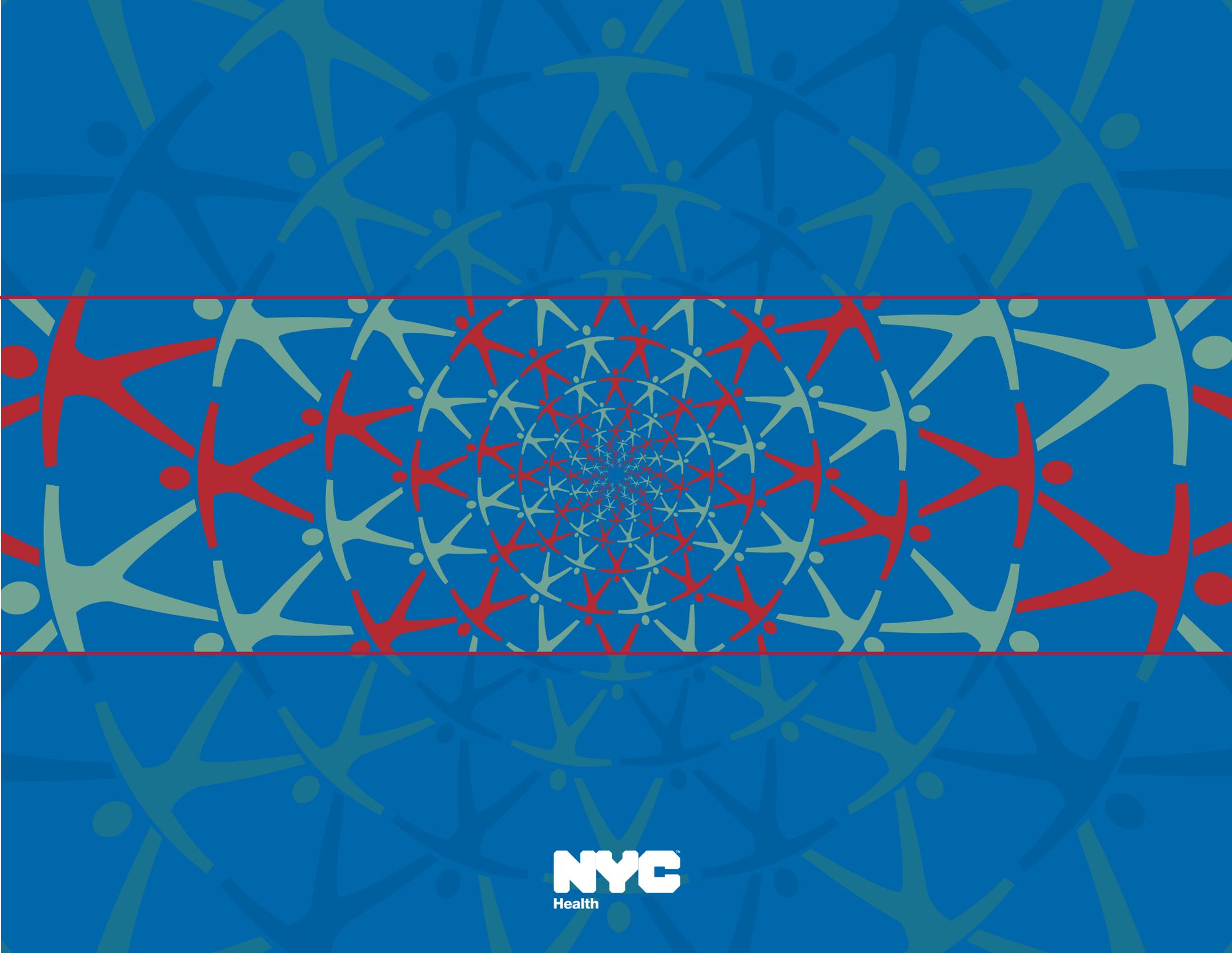
COMPLETION STEPS

1. Request help from admitting and/or nursing to identify existing isolation rooms/beds.
2. Refer to the *Isolation Room* tool example provided on page 60.
3. Customize Isolation Room tool to your institution.
4. Further develop the *Isolation Room* tool to encompass units and areas in non traditional clinical space, as appropriate to your institution.



EXAMPLE

NYC DOHMH BED SURGE CAPACITY EXPANSION TOOL		
ISOLATION ROOMS		
Date & Time:	Name/Title:	
Isolation Rooms (UV & Negative Pressure)	Status	Notes
[Unit]		
Rm/Bed		
[Unit]		
Rm/Bed		
[Unit]		
Rm/Bed		
Rm/Bed		
Rm/Bed		
[Unit]		
Rm/Bed		
[Unit]		
Rm/Bed		
Rm/Bed		
[ICUs]		
Unit/Bed		



NYC[™]
Health