

Pandemic Influenza

Hospital Planning Issues

Surge capacity, ventilators & beds



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HHS Pandemic Influenza Plan

U.S. Department
of Health and
Human Services

November 2005

Planning Assumptions

HHS Pandemic Flu Plan

Nov 05

- Universal susceptibility to the virus
- Attack rate of 30%
- 50% of those ill will seek medical care
- The number of hospitalizations and deaths will depend upon the virulence of the emergent strain. Estimates vary over a 10 fold range.



planning assumptions

Table 1. Number of Episodes of Illness, Healthcare Utilization, and Death Associated with Moderate and Severe Pandemic Influenza Scenarios*

Characteristic	Moderate (1958/68-like)	Severe (1918-like)
Illness	90 million (30%)	90 million (30%)
Outpatient medical care	45 million (50%)	45 million (50%)
Hospitalization	865,000	9,900,000
ICU care	128,750	1,485,000
Mechanical ventilation	64,875	742,500
Deaths	209,000	1,903,000

*Estimates based on extrapolation from past pandemics in the United States. Note that these estimates do not include the potential impact of interventions not available during the 20th century pandemics.

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Step 1: Determine population of locale by age groups:

Age Group	Population
0-17 yrs	400,000
18-64 yrs	1,000,000
+ 65 yrs	110,000

Enter Data
in WHITE
boxes only!

*VIEW
ASSUMP-
TIONS*

Step 2: Determine basic hospital resources:

Total staffed beds:	850
Staffed ICU beds:	66
Total number of ventilators:	75

Step 3: Determine duration (6, 8, or 12 weeks) and attack rate (15%, 25% or 35%) of the pandemic:

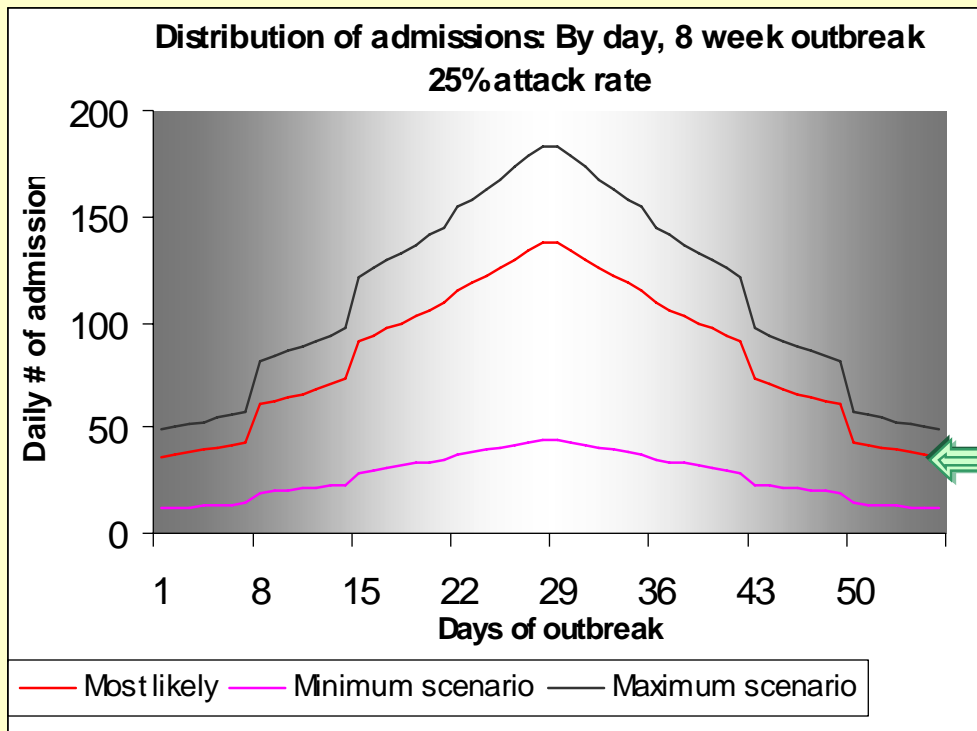
Duration: 8 ▼

Attack rate: 25% ▼

Step 4: [Click to View Results](#)

Notes: 1. Duration refers to the number of weeks you assume the pandemic wave to last.

2. Attack rate refers to the percentage of the population that becomes clinically ill due to influenza pandemic.



Total Hospital Admission (most likely)	4,652
Total Death (most likely)	833

Influenza Pandemic Impact	Weeks	1	2	3	4	5	6	7	8	9	10
Hospital Admission	Weekly admission	279	465	698	884	884	698	465	279		
	Peak admission/day				138	138					
Hospital Capacity	# of flu patients in hospital	279	465	698	884	929	855	661	436		
	% of hospital capacity used	33%	55%	82%	104%	109%	101%	78%	51%		
ICU Capacity	# of flu patients in ICU	42	89	136	180	195	190	151	104		
	% of ICU capacity used	63%	135%	207%	273%	295%	287%	228%	158%		
Ventilator Capacity	# of flu patients on ventilators	21	44	68	90	97	95	75	52		
	% usage of ventilator	28%	59%	91%	120%	130%	126%	100%	69%		
Deaths	# of deaths from flu			50	83	125	158	158	125	83	50
	# of flu deaths in hospital			35	58	87	111	111	87	58	35

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Local & Hospital Planning Issues

- Ventilators
- Surge capacity/ Infection control issues
- Pathology issues
- Occupational Health
- Psychology
- Communications
- Disruption of community services

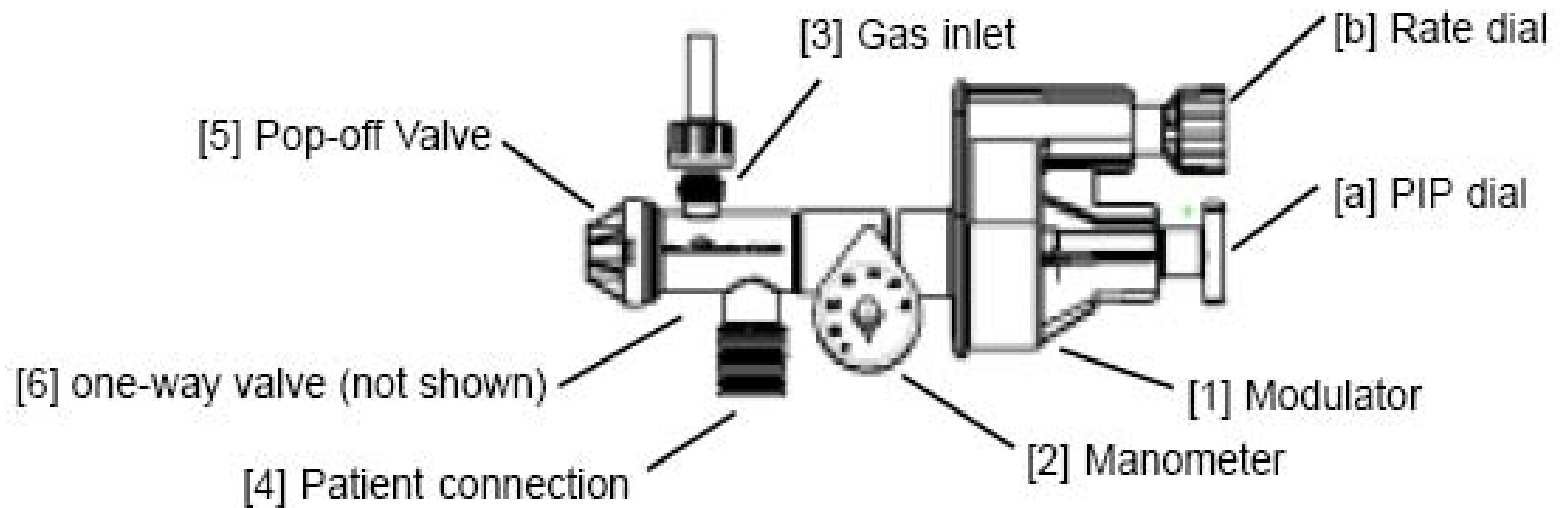


Ventilators

- Estimate 8-10 fold increase in respiratory failure patients sustained for 4 weeks.
- Inventory of ventilators should be assessed based upon cancellation of elective surgery

RespirTech Pro automatic resusitator

Figure 1 – VAR Component Description





Limitations of Resuscitators

- Limited humidification circuits
- Lack of batteries and alarms
- Lack of airflow sophistication
- Limited pediatric experience
- Rapid depletion of O_2

**Guidelines for Acquisition
of Ventilators to Meet Demands
for Pandemic Flu and Mass Casualty Incidents**

**American Association for Respiratory Care
May 25, 2006
AARC, 9425 N. MacArthur Blvd., Irving TX 75063
972-243-2272 * info@aacrc.org**



Surge capacity

- Most hospitals will need to create annexes for overflow admissions
 - Considerations: location, suitability for O2, staffing, Dietary services surge capacity.
 - Augmentation of the inventory of personal protective gear e.g. masks, gowns, gloves.
 - Minimal care ward for special populations?



Surge capacity

- Staffing decrement during peak weeks of 10-20%
- There is a need for advance credentialing of healthcare workers not active in the workplace – potential volunteers.



Mortuary/ Pathology Services

- Contracts with refrigeration trucks.
- Questionable sensitivity of rapid Influenza detection assays (Rapid antigen detection) used for screening



Psych Issues

- Plan for psychological deterioration of remaining staff.
- Ongoing PTSD
- Consider development of Critical Incident Teams to be used for staff decompression



Occupational Health

- Plan for screening large numbers of employees for acute respiratory illness prior to work shift
- Disposition of employees with minor acute respiratory symptoms?
- Day care for employee's children



Disruption of Community Services

- Delivery of food and supplies
- Plowing of streets
- Maintenance of electrical, water and sewage services
- Waste disposal



Supply issues

- Anticipate serious disruption of supply inventory and delivery.
- Evaluate essential items
- Anticipate antibiotic shortages
- Consider a stockpile of exam gloves, surgical masks, eyewear, gowns and N95 masks
- Do this now.



Communications

- Consider development of advance communications with hospital staff and physicians.
- A statement regarding plans and potential contingencies should be developed and communicated now!

How to avoid Influenza
Gargle Daily

