



BLOOD BANKS & TRANSFUSION IN CATASTROPHES.

**Dra. Emma Castro Izaguirre.
Centro de Transfusión de Cruz
Roja Española. Madrid, Spain.**

Tel Aviv, 24-25 November 2008.

Introduction



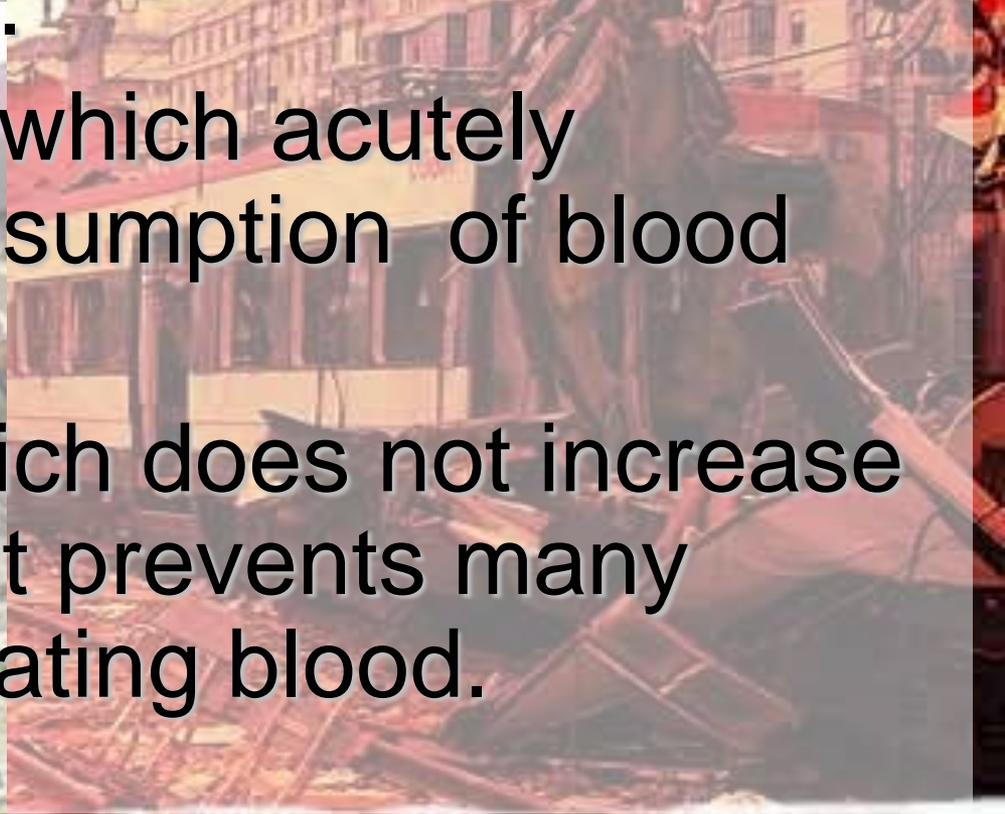
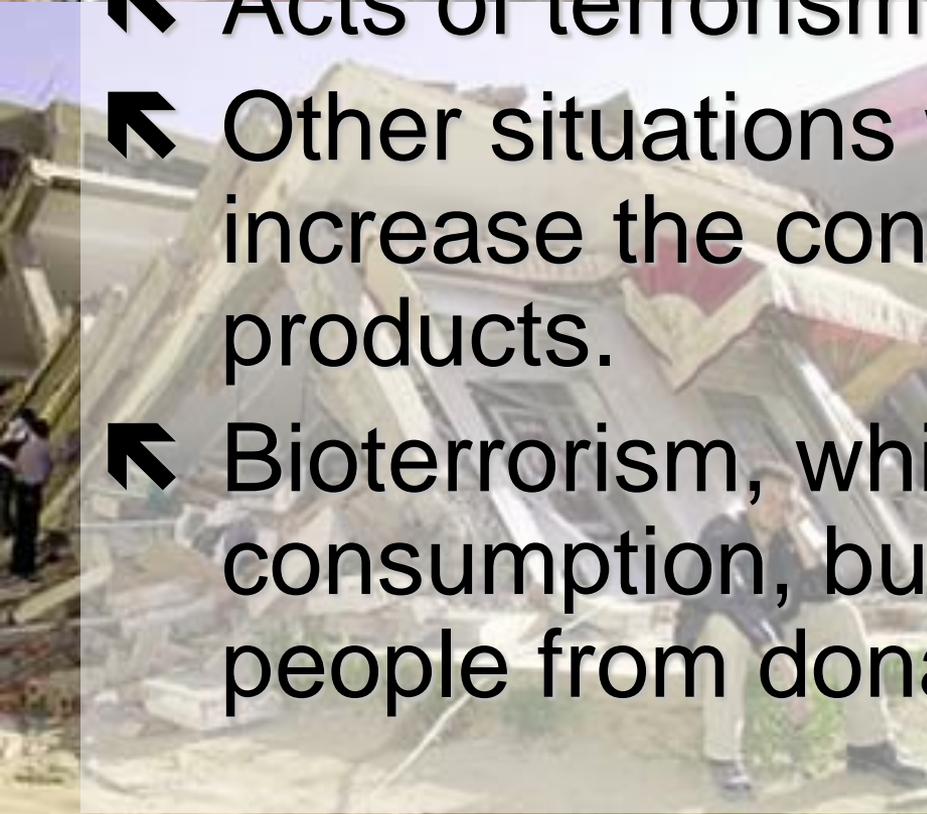
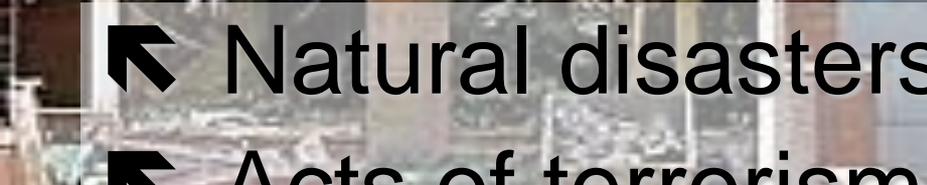
- ↑ Necessary to establish a Plan of Action with respect to regional and national blood centres before being faced with catastrophes.
- ↑ Must coordinate with: other blood centres, Transfusion organizations, local and national health authorities, and rescue organizations.

Catastrophes in Transfusion Medicine

1. All circumstances which suddenly:
2. Require higher than normal quantities of blood.
3. Prevent normal collection, processing or distribution of blood components.
4. Create a massive influx of donors due to the necessity to send blood to other locations.

Types of catastrophes

- ↪ Natural disasters.
- ↪ Acts of terrorism.
- ↪ Other situations which acutely increase the consumption of blood products.
- ↪ Bioterrorism, which does not increase consumption, but prevents many people from donating blood.



- 1) Determine blood requirements.
- 2) Facilitate transportation of blood between centres.
- 3) Use of a single message to communicate with all blood centres in the country and the general public notifying them of the requirements for blood in the affected areas.

Premises to cover requirements during the first 24 hours.

- 1) Group O red blood cell concentrates should be dispatched immediately. Neither plasma nor platelets will normally be required - apart from exceptional circumstances.
- 2) The quantity sent should not exceed the normal requirement for 1 day (adding groups ABO together).
- 3) The centre with the most facilities should dispatch the consignment (normally the nearest).
- 4) The requirements should be revised after the first 24 hours and updated in accordance with the prevailing circumstances.

Calculate the red blood cell requirements

Expected Hospital admittances (Only those related to the disaster)

Total normal Hospital admittances:		_____
Total potential expected admittances:	(+)	_____
Total expected admittances:	(A) =	<input type="text"/>

O+ and O- red cells available

Total N° O concentrates in Hospitals and Blood Banks:		_____
N° O RCs required for disaster unrelated transfusions: (-)		_____
Total O RCs available:	(B) =	<input type="text"/>

Calculate the total number of units required from the exterior

Total expected admittances	<i>Multiply</i> $(A) \times 3$	Total number O RCs required	Total number O RCs available	Total O RCs required from the exterior
_____	$\times 3 \text{ units} =$	_____	_____	_____
(A)		(-) less	(B)	

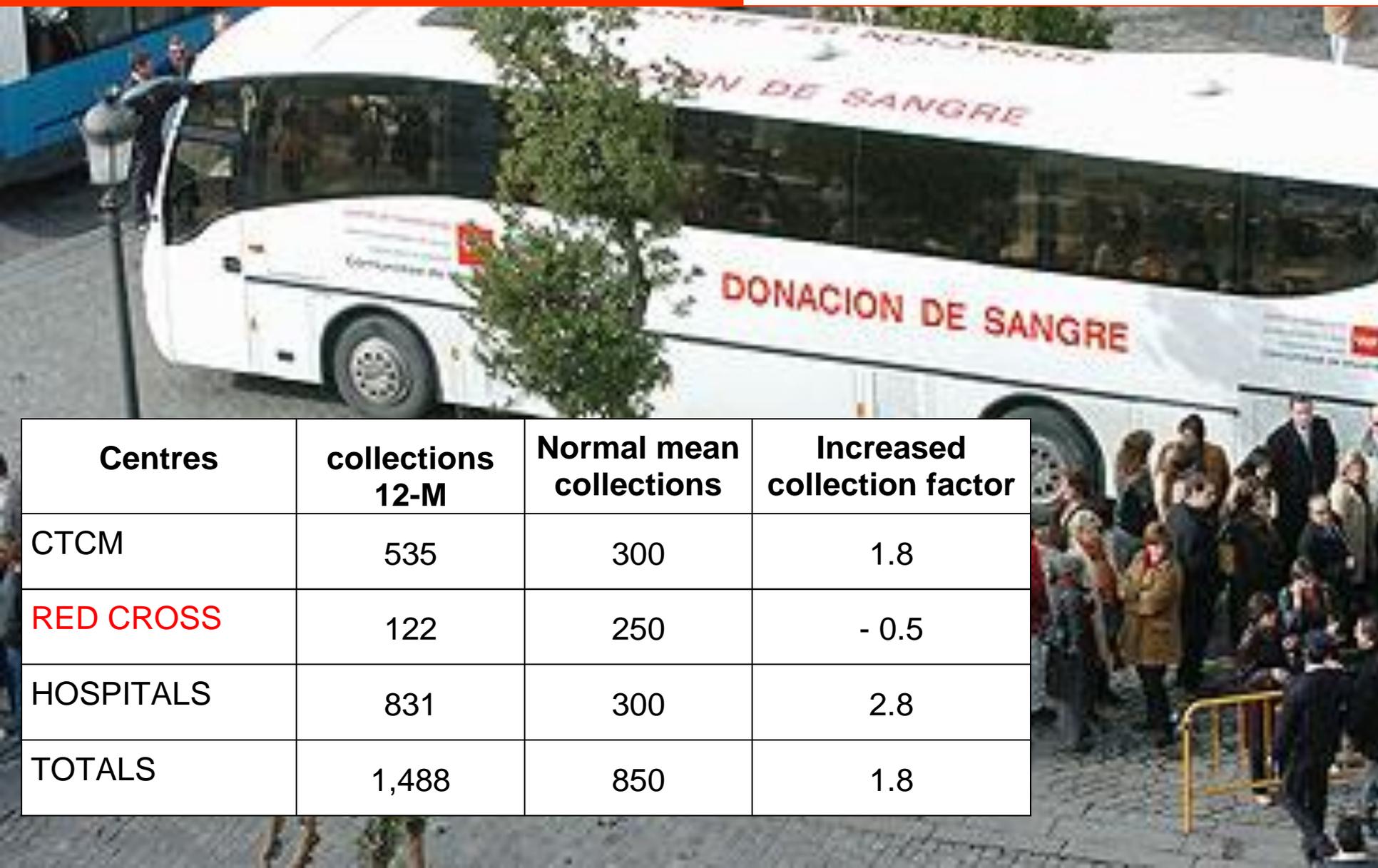


RCs collected + received in Madrid on 11- M

CENTRES	Extractions 11-M	Normal mean collections	Increased collection factor	From other centres	Total accum.	Increased incoming factor
CTCM	1,963	300	- 6.5	2,849	5,347	18.0
RED CROSS	880	250	3.5	0	1,002	3.5
HOSPITALS	3,624	300	12.0	790	5,245	17.5
TOTALS	6,467	850	7.6	3,639	11,484 (+ previous stock)	13.5



Donations Madrid 12-M



Centres	collections 12-M	Normal mean collections	Increased collection factor
CTCM	535	300	1.8
RED CROSS	122	250	- 0.5
HOSPITALS	831	300	2.8
TOTALS	1,488	850	1.8

Collections in Madrid 11-18M in hospitals. 2003 vs 2004



2003	2004	% increase
2,035	6,491	219

Collections 11-M vs Transfusions

Units available RCs (TCM +CRE)	Tx-RCs 11-M	Tx-RCs 12-M	Total RCs required	Total units prepared Madrid + imported
> 1,004 + hospital stocks	696	594	1,290	4,643 + hospital stocks

Conclusions 11-M

- A much greater number of units were collected than necessary (9 times more) and additional units arrived unnecessarily from other Autonomous Communities.
- On this occasion, the stocks available in the Madrid blood banks would have been sufficient.
- The lack of coordination and excessive build-up affected donations during subsequent months and diminished resources.

Lessons learnt from the experience

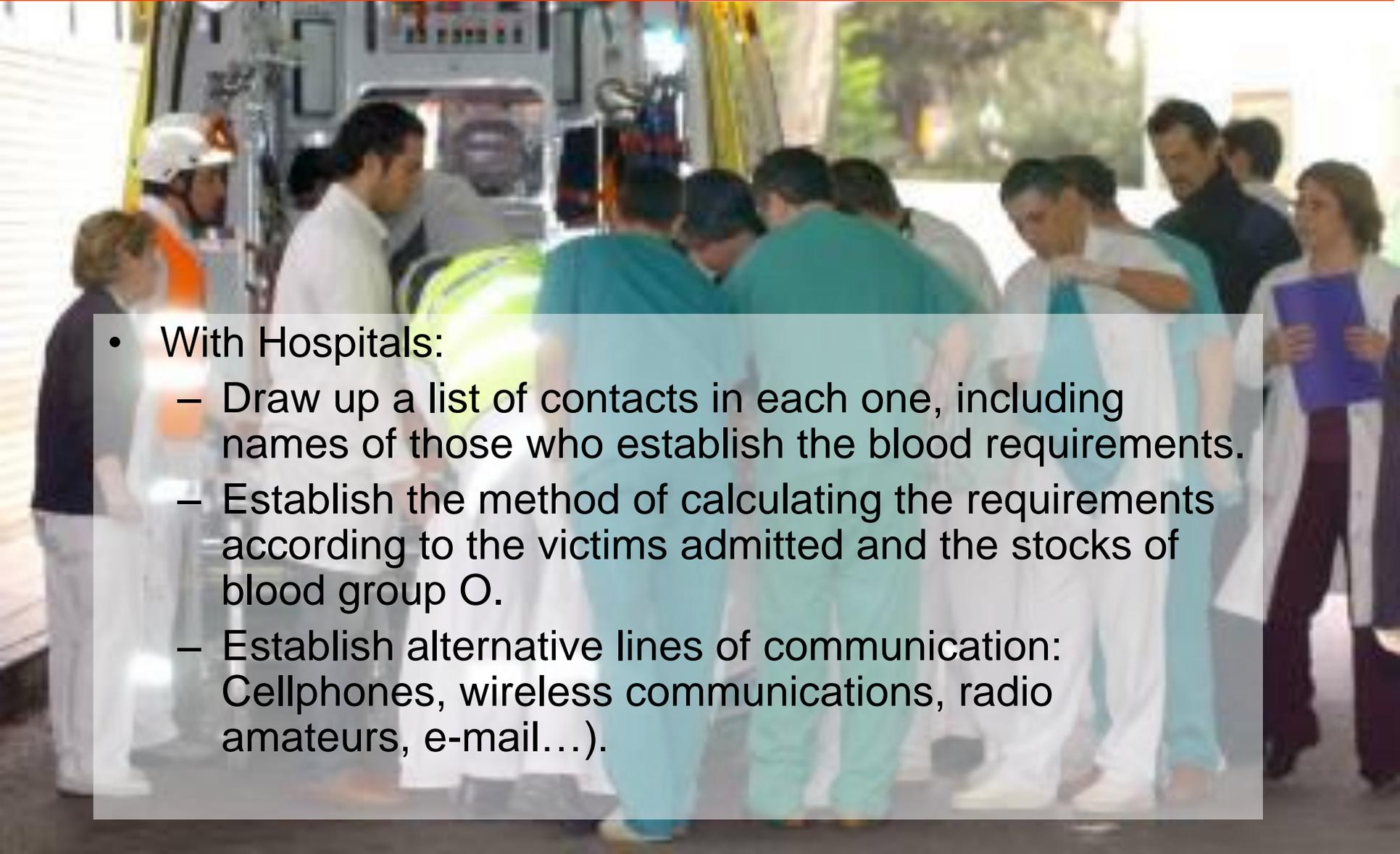
- 1) Control blood collections and do not exceed real requirements.
 - 2) Centres must maintain high stock levels (for 7 days) so they are “always” prepared.
 - 3) Stock level control is important at a national level.
- The problem is not normally a shortage of prepared blood, but the lack of coordination in its distribution.

Plan Preparation

- 1) Communication strategies
- 2) Transport options
- 3) Coordination with local, regional and national authorities
- 4) Maintenance of supplies for blood treatment
- 5) Maintenance of power supplies and the telephone system
- 6) Strategies for organizing donors and volunteers
- 7) Strategies for working with the media



Communication strategies I

- 
- With Hospitals:
 - Draw up a list of contacts in each one, including names of those who establish the blood requirements.
 - Establish the method of calculating the requirements according to the victims admitted and the stocks of blood group O.
 - Establish alternative lines of communication: Cellphones, wireless communications, radio amateurs, e-mail...).

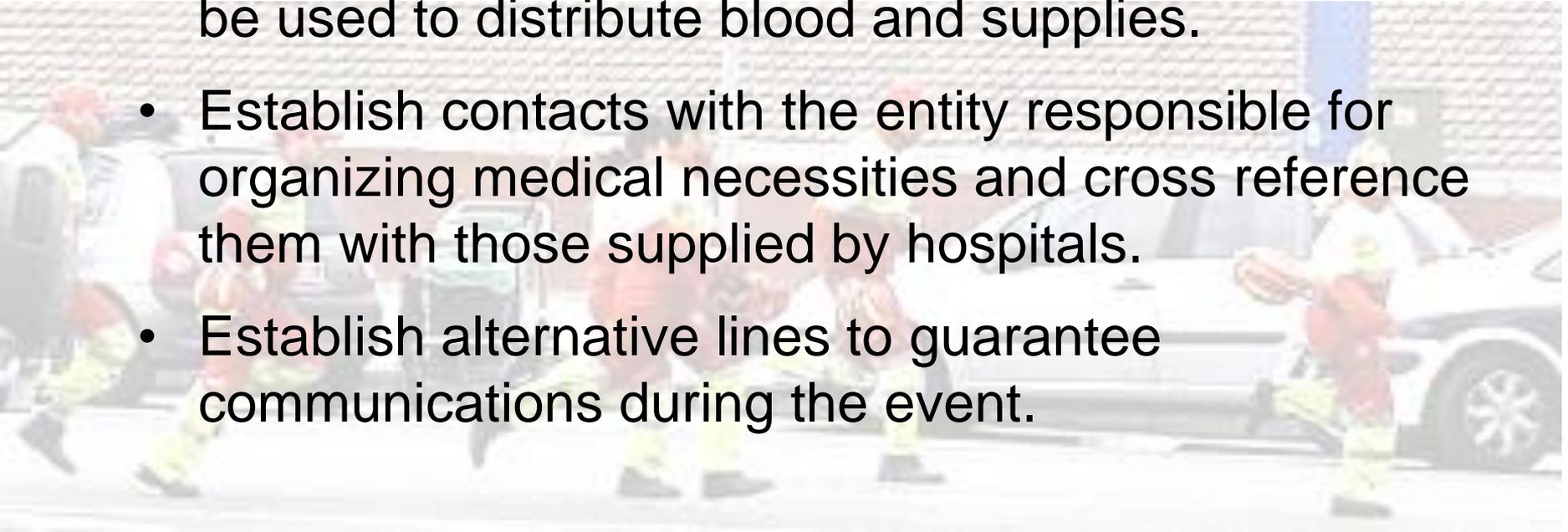
Transport options



- Establish contact with transport services (land, sea or air). Have updated, accessible lists (telephone, e-mail, radio).
- Establish relationships with local emergency services: local police, civil protection organizations, Red Cross, and the authorities so that they will transport blood or allow the centre's vehicles to pass.
- Give the emergency services instruction on the special characteristics of the blood supply, requirements, conservation and safety.
- Have authority approved adhesive corporate logos available to allow access to affected areas.
- Establish alternative means of transport or busses for those personnel who must gain access to the centre to carry out their duties.

Coordination with emergency services

- Include the blood centre on the list of critical entities, in planning sessions and simulations.
- Locate the places used by the emergency services during emergency situations, because they could be used to distribute blood and supplies.
- Establish contacts with the entity responsible for organizing medical necessities and cross reference them with those supplied by hospitals.
- Establish alternative lines to guarantee communications during the event.



Blood processing material supply chain



- Prepare a list of products, services and supplies necessary for collecting, processing, storage and temperature control, transportation and blood testing,
- Establish an emergency inventory for each item.
- List of suppliers for each product and means of contact.
- Establish a contingency plan with suppliers.

General maintenance and supplies

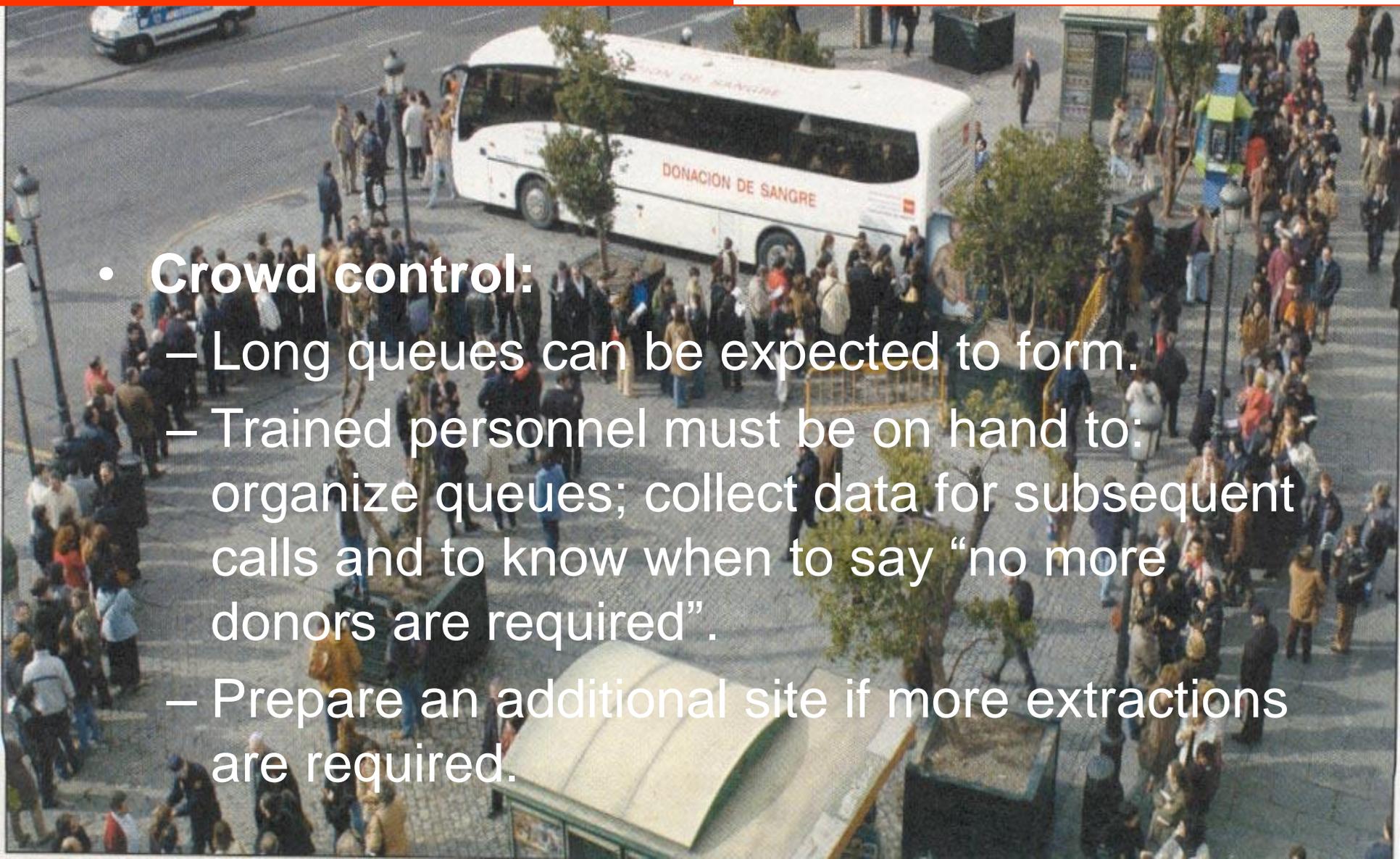
- The blood centre must remain operative and in communication with the exterior.
- It must ensure that it is on the list of priorities with respect to repairs and reestablishment of services, e.g. with electricity and telephone service suppliers.
- The centre must have alternative sources of electrical power (generators).
- Alternative telephones and radio.

Organization of blood donors I



- **Planning collections:**
 - Determine the maximum capacity (personnel, collection material, time).
 - Consider collecting only blood type O and Rh negative.
 - Consider ABO/Rh typing for new donors.

Organization of blood donors II

- 
- **Crowd control:**
 - Long queues can be expected to form.
 - Trained personnel must be on hand to: organize queues; collect data for subsequent calls and to know when to say “no more donors are required”.
 - Prepare an additional site if more extractions are required.

Organizing volunteers

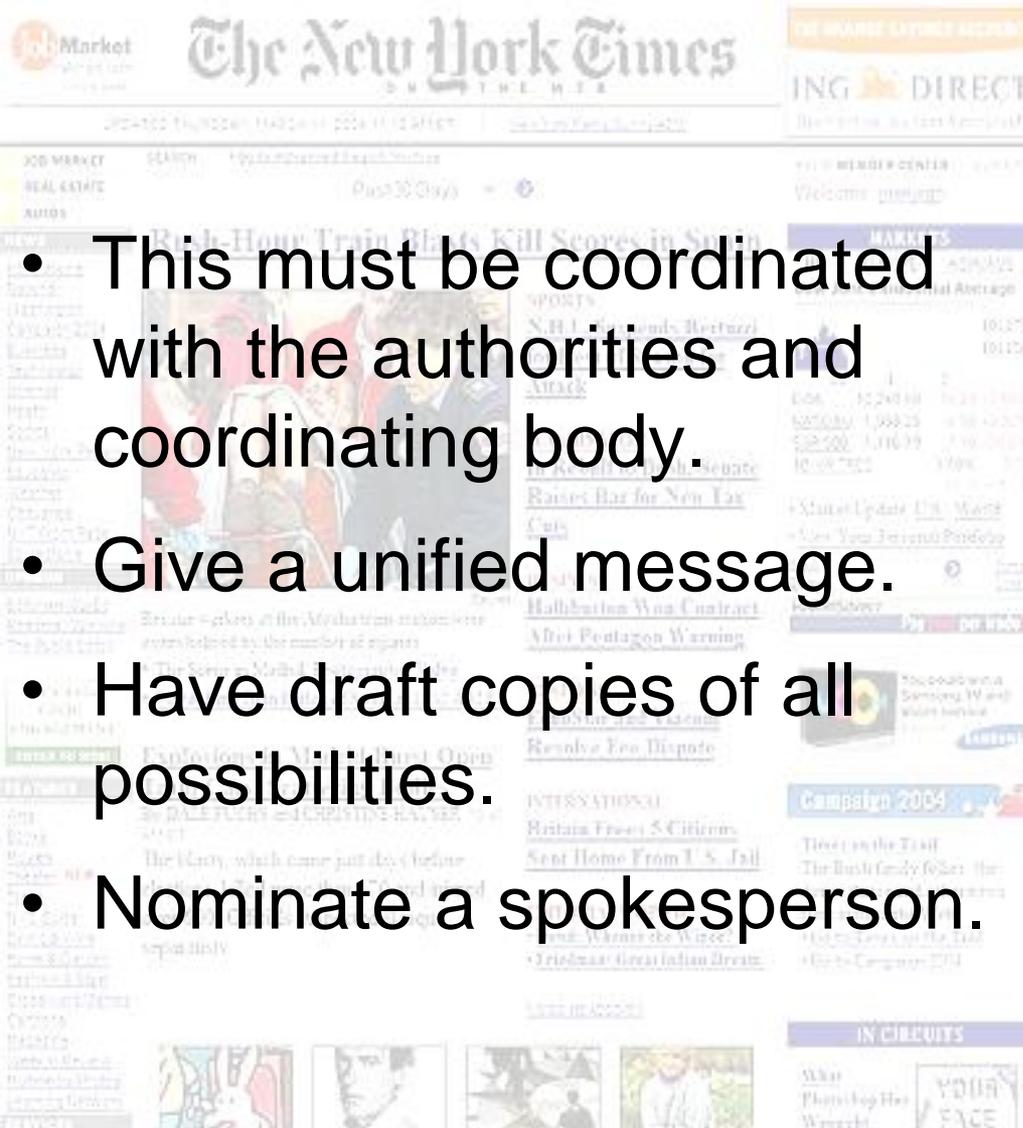


Organizing volunteers



- It may be necessary to call volunteers:
 - Define personnel to contact them.
 - Use them solely for non-medical tasks and logistic support.
- Volunteers may turn up spontaneously:
 - Have contacts trained for these, as there will normally be an excess and it will be necessary either to tell many that they are not required or organize their activity.

Strategies for working with the media



- This must be coordinated with the authorities and coordinating body.
- Give a unified message.
- Have draft copies of all possibilities.
- Nominate a spokesperson.

- Maintain personnel safety:
 - Protect the building, control access and have evacuation plans.
 - Establish shift changes and avoid exhaustion. Have lists of personnel telephone numbers.
- Maintain safety standards in processes and products.
- Maintain supplies of emergency materials: Water, batteries, torches.

