



Advisory Committee Blood Safety and Availability 1/2004 Meeting

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Israel



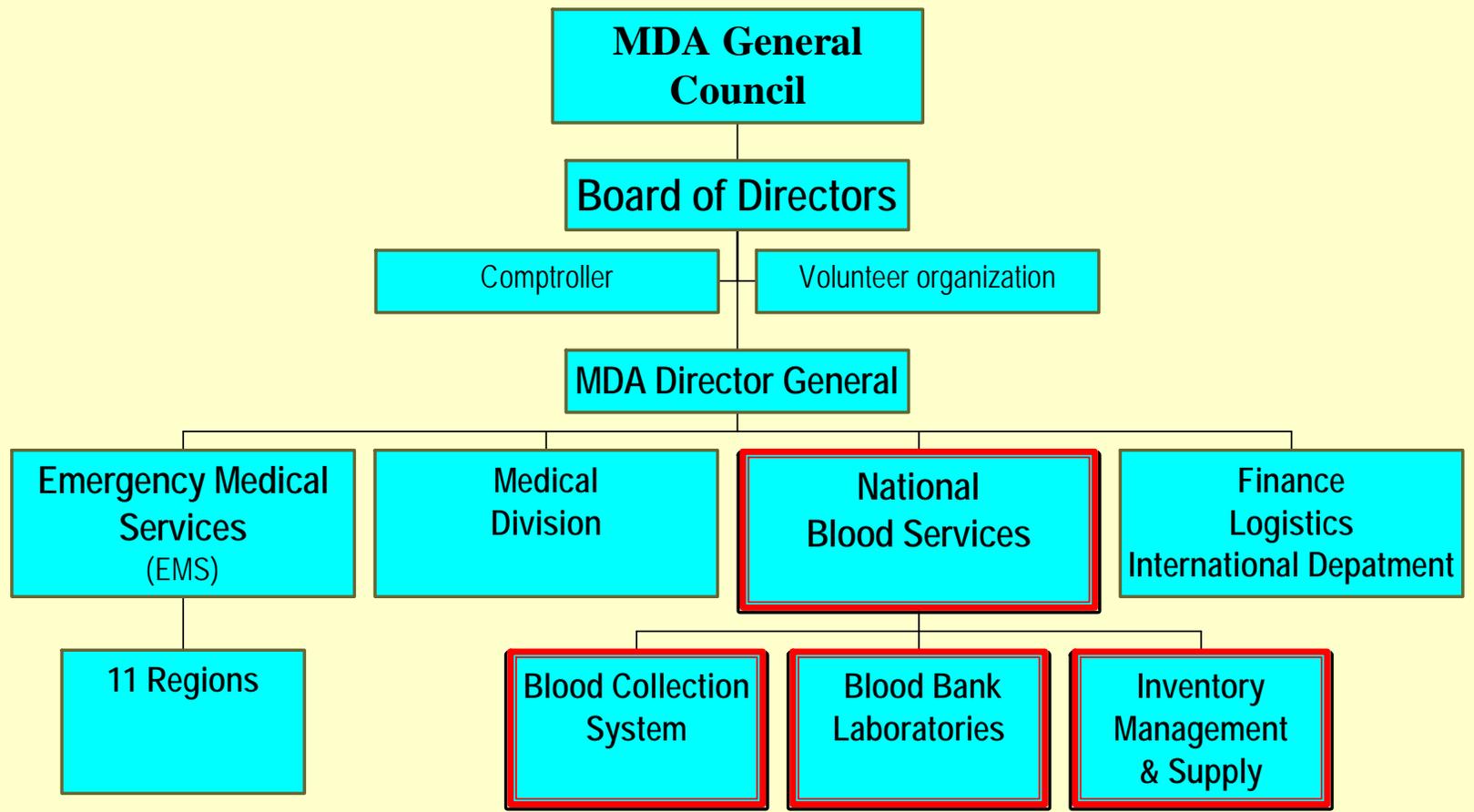


Magen David Adom (MDA)

- ☆ A civil, statutory, non-for profit organization, founded by volunteers in 1930, and operates under "MDA law" (The Israeli Knesset, 7/1950)
- ☆ Provides first-aid and pre-hospital EMS for the population
- ☆ Operates Israel's central blood services
- ☆ The Israeli National Society, which works following the IFRCRC principles



MDA STRUCTURE





MDA National Deployment

Staff

- ✧ 1440 Employees
- ✧ 6500 Adults & Youth Volunteers



Functions

EMS (1253 FTEs):

- ✧ 1 National Operation Center
- ✧ 11 Regional Dispatch Centers
- ✧ 96 Dispatch Stations

Blood Services (187 FTEs):

- 1 National Center
- 2 Component lab.& Repositories
- 28 Donor rooms





Issues to be addressed

- National blood program, regarding blood components & plasma products in Israel
- Management of the national blood inventory and supply in peace, and during disasters
- Requirements of blood units and components in Multi-Casualties Events (MCEs)
- The government role regarding the national blood inventory and supply





MDA Blood Services

- ✧ **Collection of 95% of all blood units needed nationwide, from non-remunerated donors (276,000 units in 2003)**
- ✧ **Preparation of routine and modified blood components**



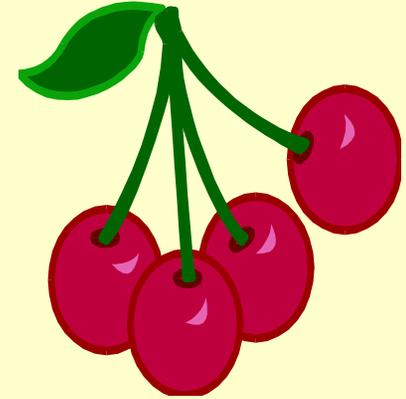
- ✧ **Testing the units for blood groups, antibody screening and infectious disease markers**
- ✧ **Storage and maintenance of the country's blood inventory**
- ✧ **Daily shipments to hospital blood banks and clinics**
- ✧ **Supply of all the military blood needs**





MDA Blood Services

Additional Activities

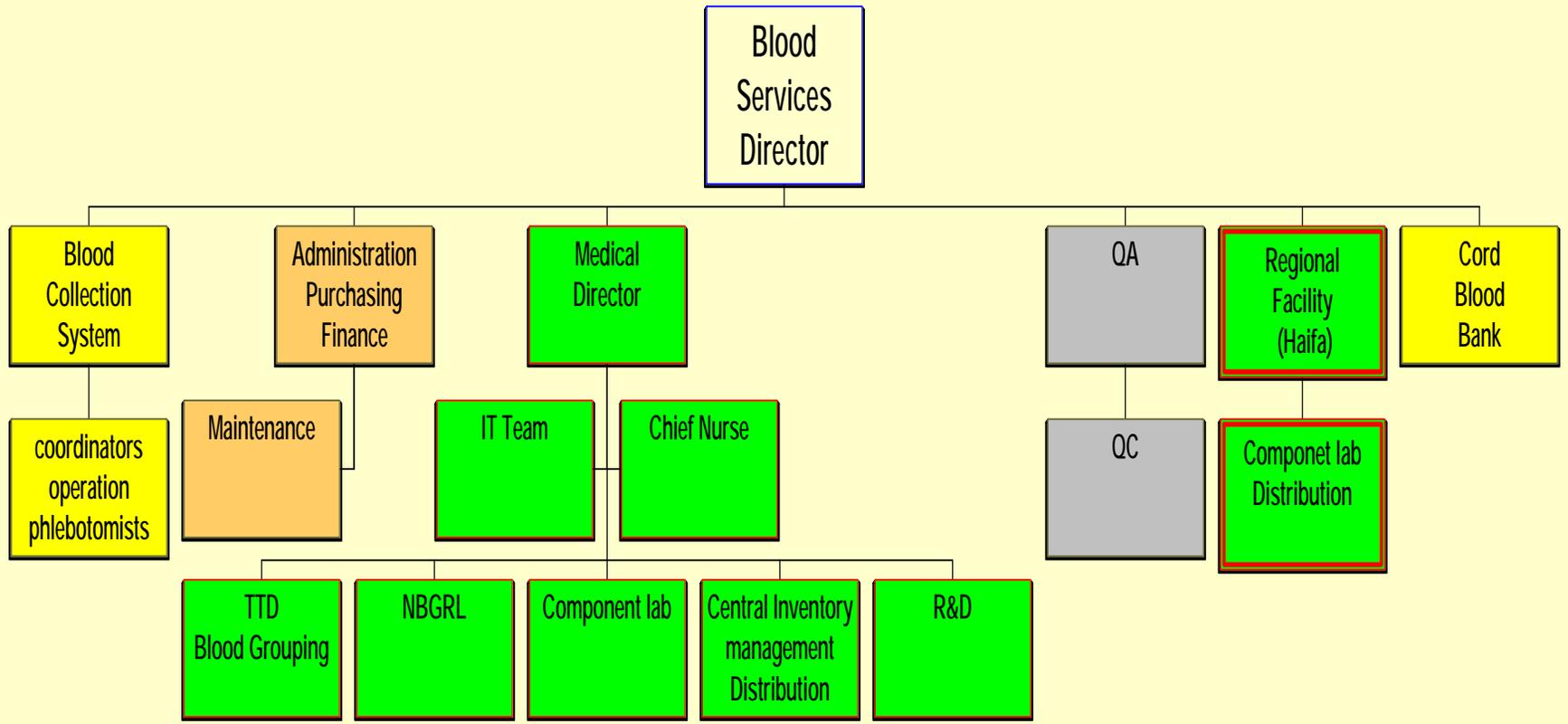


- ☆ **National Blood Group Reference Laboratory (NBGRL)**
- ☆ **R& D of projects related to TM**
 - ☆ **Safer systems for donor samples collection**
 - ☆ **Macrophages for chronic wounds**
 - ☆ **AID-MERC grant (EPRI-BGU-MDA)**
 - ☆ **Detection of bacterial contamination**
- ☆ **National/Regional Cord Blood Bank**
- ☆ **International collaborations**

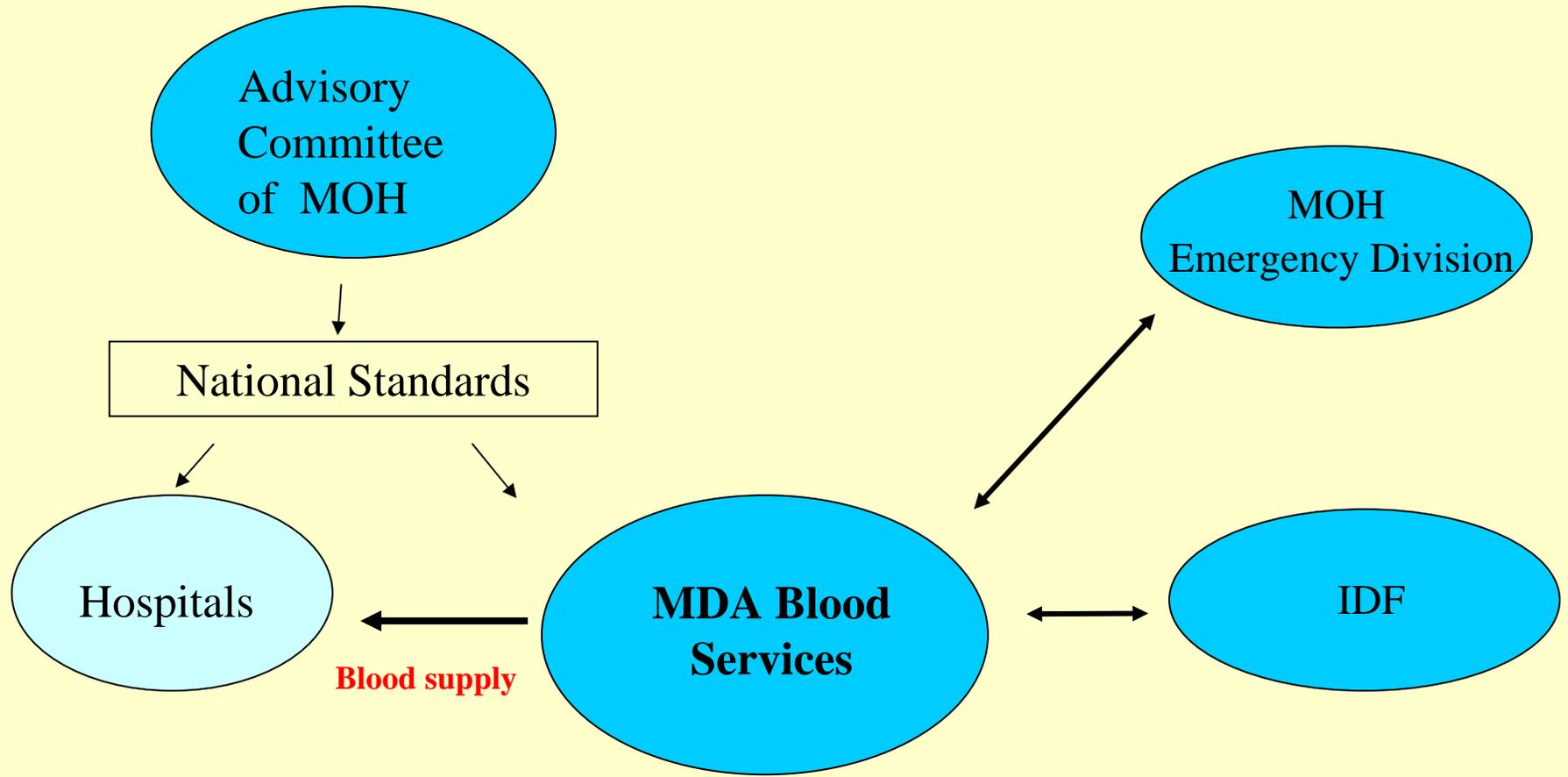




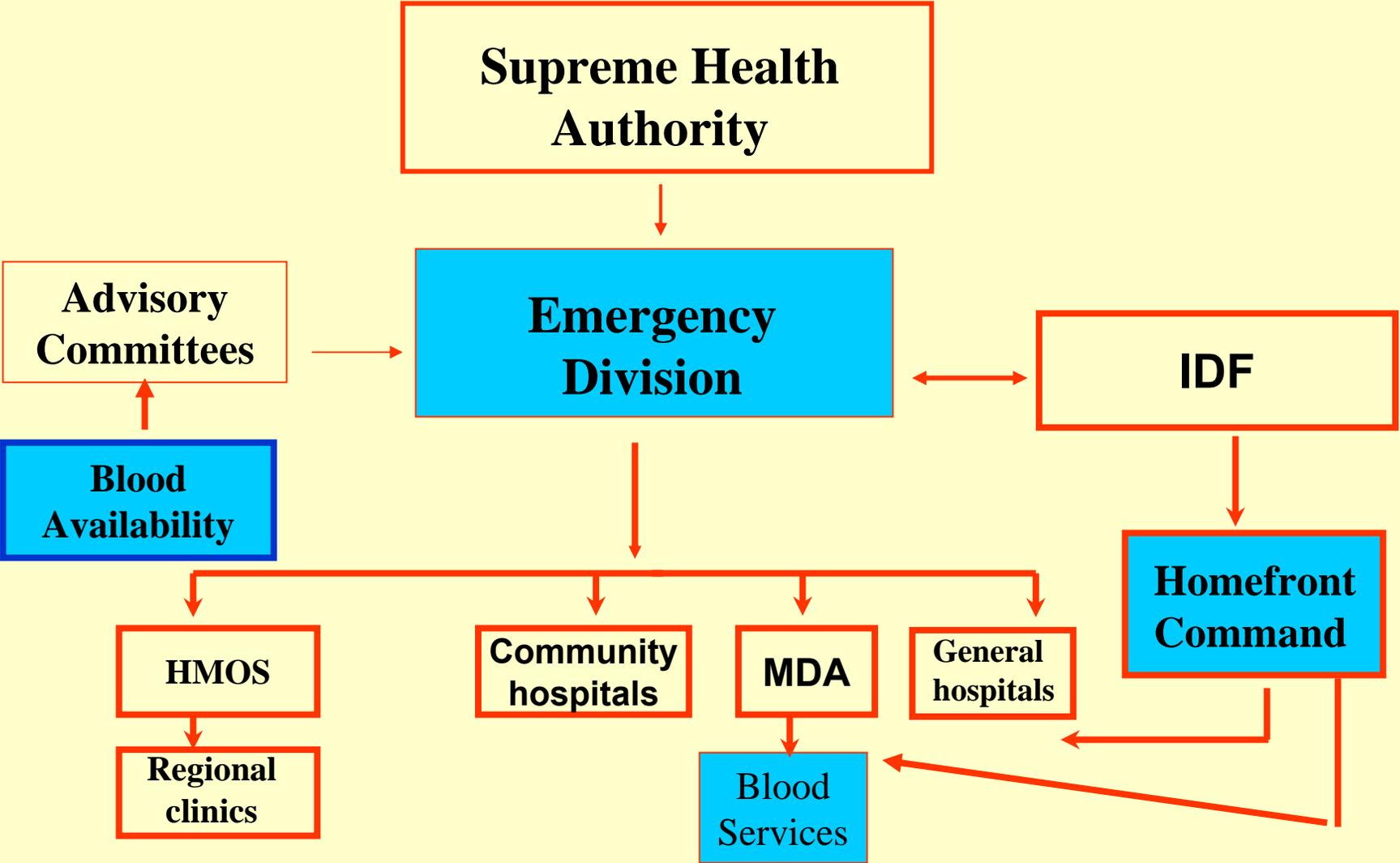
MDA Blood Services Organization



The National Blood Program



National Health System in Emergency Situations





Responsibilities & Operations

☆ Central blood services:

Collection, component preparation, testing and distribution, nationwide

☆ Hospital blood banks:

Preparation of units for transfusion

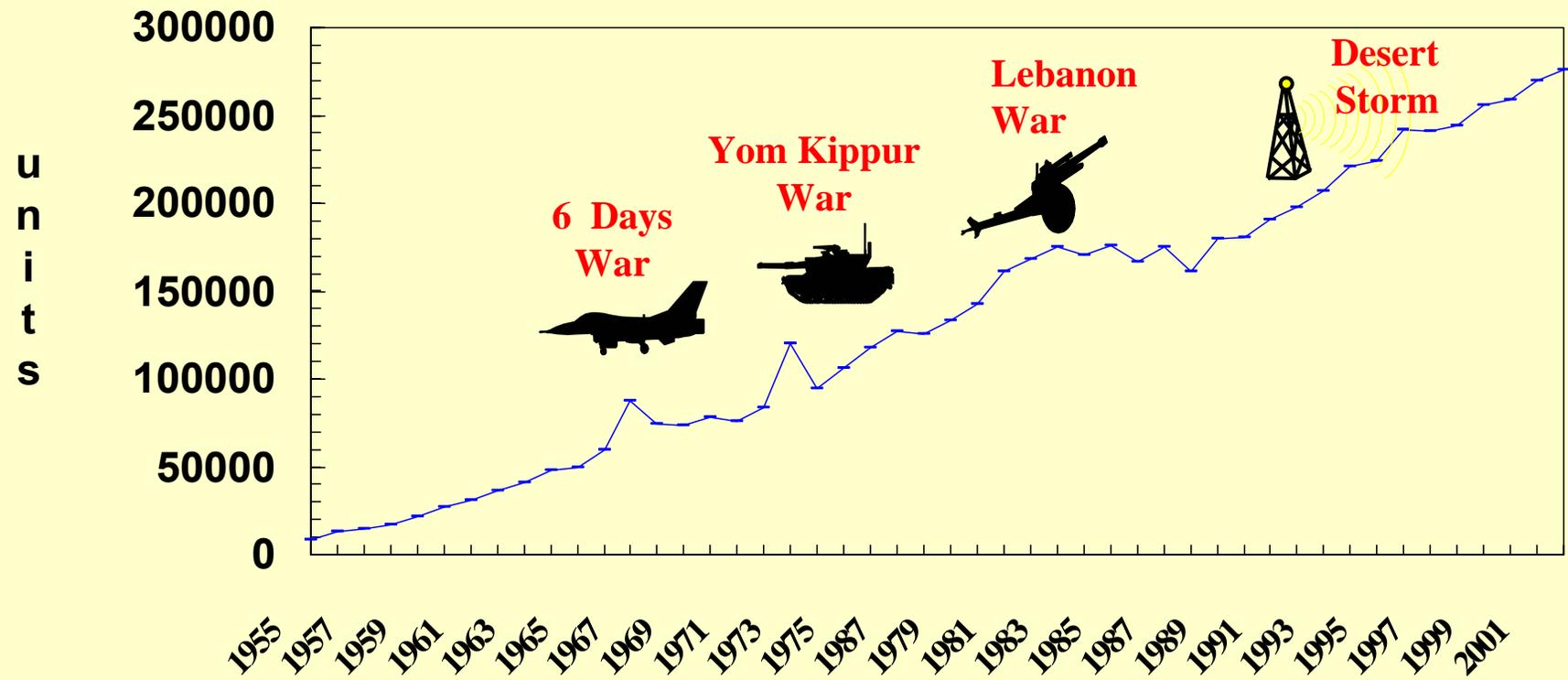
☆ Pre-hospital system:

Usage of “O” PC units only



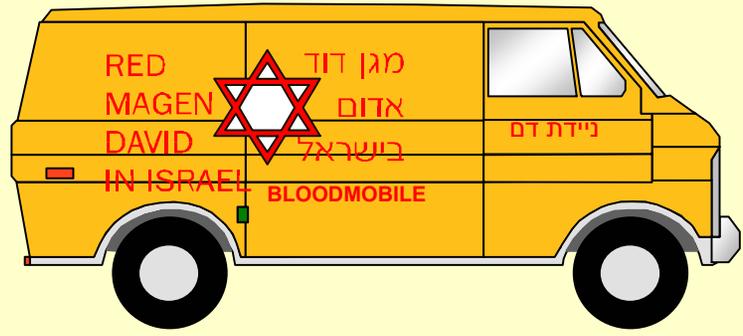


BLOOD DONATIONS in ISRAEL 1955-2002





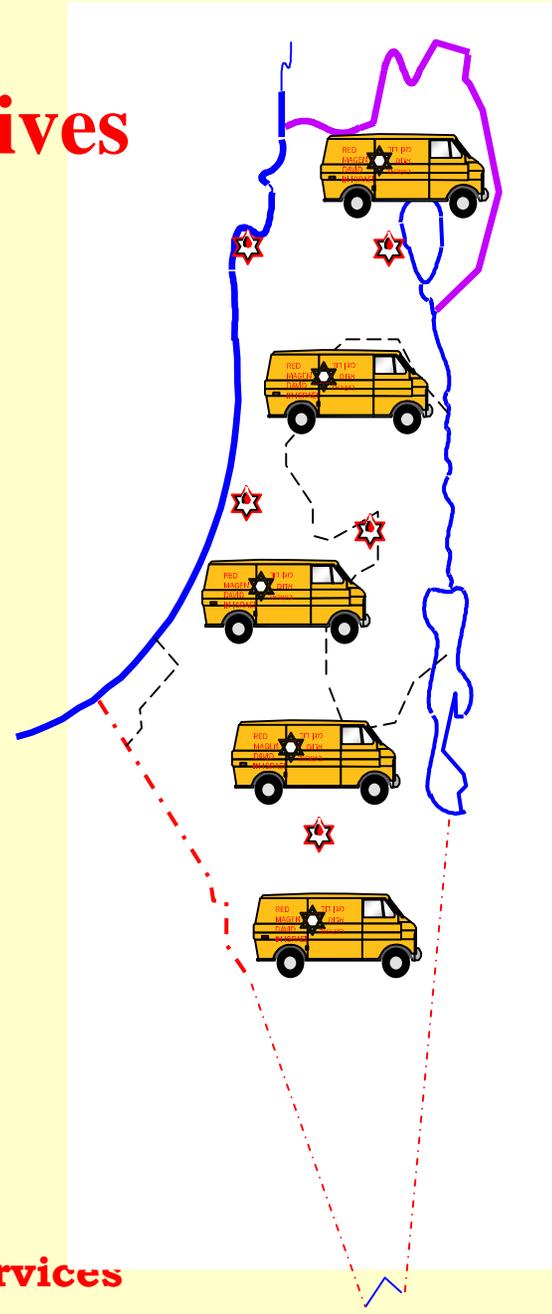
Mobile Blood Drives



85% of all units are collected in mobile blood drives, conducted daily, nationwide

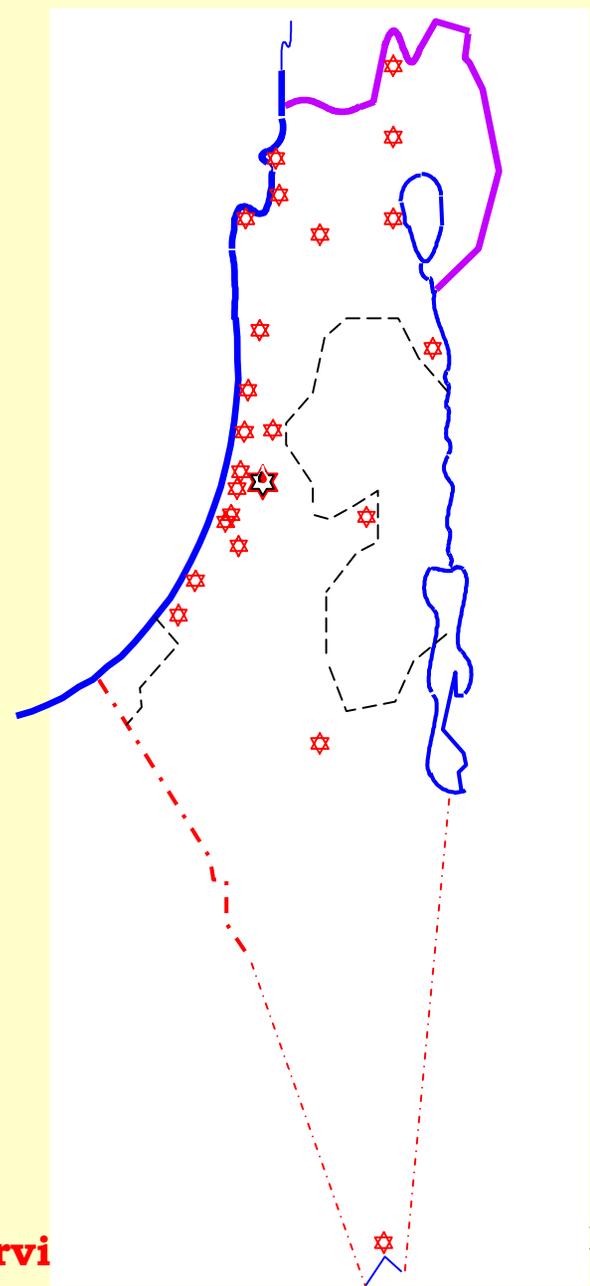
22 +2 mobiles

10 self-contained units





15% of the units are collected in fixed-sites donor rooms, located in MDA first-aid stations.





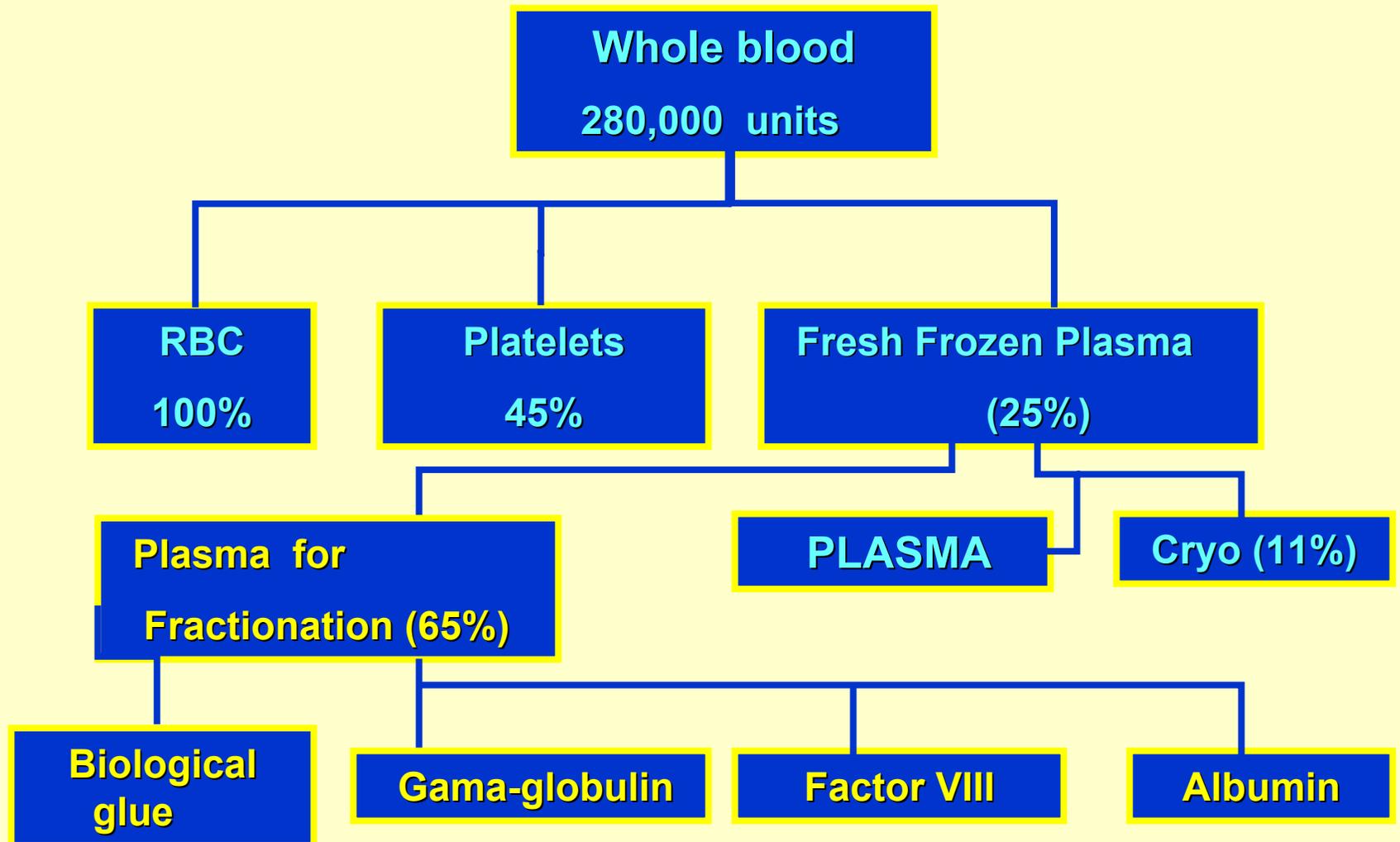
Who are our donors?

☆ Age:	17-40y	75%
☆ Gender:	Male	75%
☆ Origin:	Israeli Born	78%
☆ Site:	Mobiles	85%
☆ Incentive:	Future Credit	96%
☆ Donation:	1st Time	27%
☆ Status:	Civilians	75%





Blood components & plasma products



Plasma products

- Production from Israeli plasma is done at MDA PFI, operated by Omrix Biopharmaceutical Ltd.
- Final batch release of biologics is performed by MOH laboratories
- Registration of local and imported plasma-derived products is required by the Institute for Standardization and Control of Pharmaceuticals, Pharmaceutical Division, the MOH.



Smallpox Vaccination project

- The Israeli MOH decided to vaccinate 21,000 previously immunized Health Care Workers (1st responders)
- The target was to collect 2500 liters of plasma, for the production of VIG
- MDA blood services were requested to organize the project
- About 5,200 successfully vaccinated individuals donated blood/plasma 21-28 days post-vaccination (8/2002-8/2003).





Intravenous VIG specification



Parameter	Limit
IgG content	42.8-55.0 mg/ml
Anti Vaccinia (ELISA)	>5000 OmriUnits/ml
Anti Vaccinia (PRNT₅₀)	>100 μ
Purity	>99% IgG
Total protein	4.5-5.5 g%
Distribution of molecular size (HPLC)	Monomer & dimers $\geq 90.00\%$ Polymers & aggregates $\leq 3.00\%$



National Blood Inventory Management



National Blood Inventory Management



MDA Blood Services:

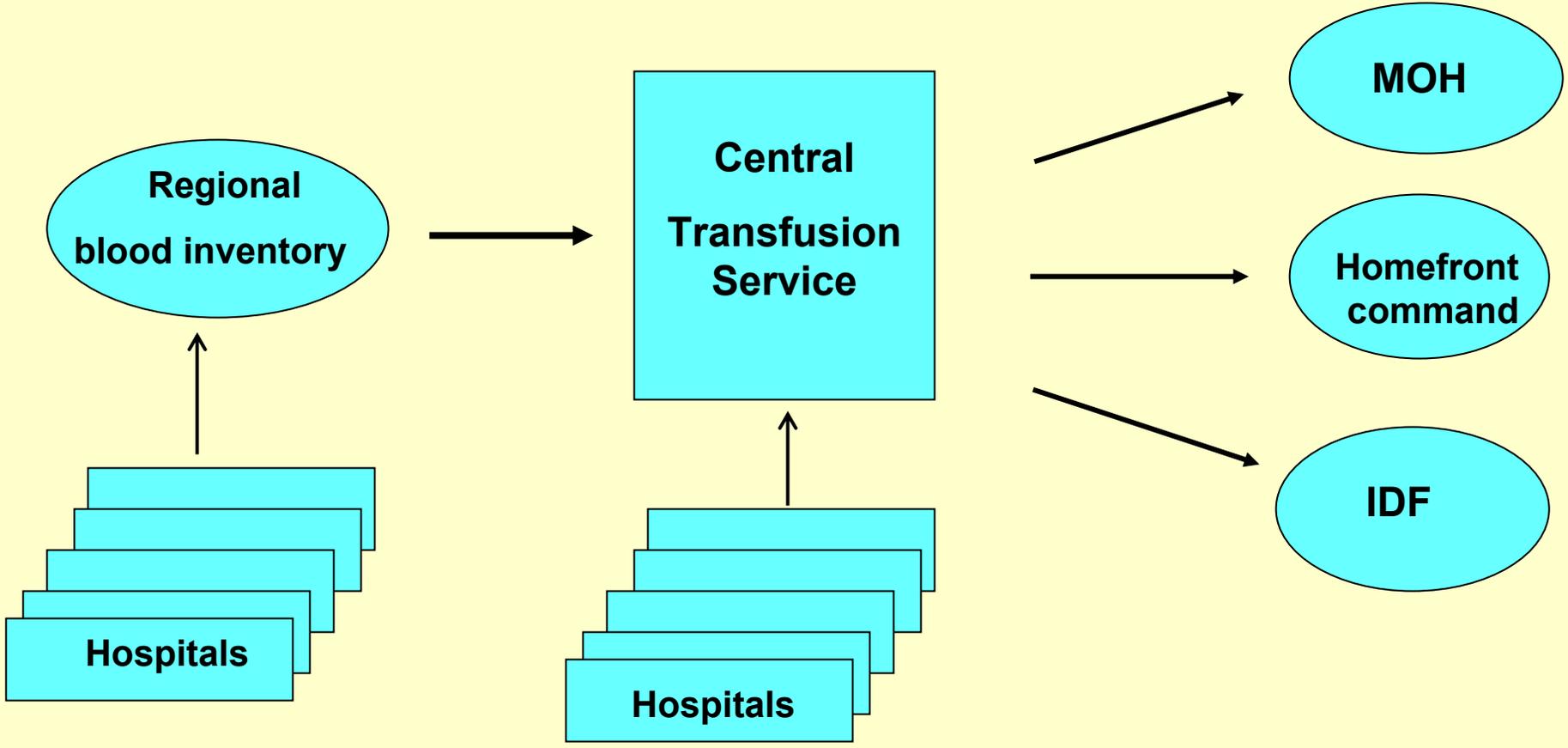
- ✧ Maintain an inventory of 3 days' work
- ✧ Receive daily report from hospitals, upon placement of their blood order
- ✧ Coordinate and supply blood units/ components to all hospitals
- ✧ Supply all needs of the IDF medical corps
- ✧ Conduct public appeals when shortage is expected

Hospitals:

- ✧ Maintain an inventory of 3 or 5 days' work (depending on hospital size, activities and geographical distance from MDA repositories)



Central Control of the National Blood Inventory



Blood inventory management (2002)

Subject	*DHHS sentinel monitoring study	**MDA-BS Israel
RBC units supplied/y	266,292	236,451
Number of beds	12,469	14,410
Daily blood supply (u)	730	612
RBC Inventory (units)	7,306	6,914
Inventory (day's work)	7.8	5
Hospitals inventory	7.2	1.9

*Nightingale et al. Transfusion 43:364-72, 2003

**Silverman, Yahalom, Nightingale, Sandler and Shinar, submitted for publication 2004





Blood Inventory Management-USA

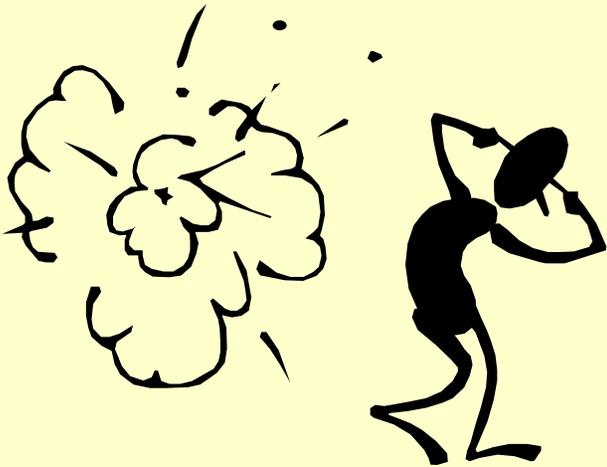
- DHHS blood supply sentinel monitoring program *
 - Blood inventory from 3 regional centers:
 - Pittsburgh, Seattle, Tampa-St. Petersburg
 - 26 sentinel hospitals
 - Reports include: units in inventory, units crossmatched, transfused, outdated and exported.

*Nightingale et al. Transfusion 43:364-72, 2003





Operation During Multi-Casualties Events and Other Emergency Situations





Issues in National Emergencies

- ✧ Immediate increased demand for blood units and components
- ✧ Need to determine levels of collection, production, testing and supply
- ✧ Organization of personnel and work schedule
- ✧ Work in sheltered facilities





MCE due to suicide terrorist attacks





Blood Services SOPs in a Nutshell

- ☆ Receive notification, ASAP, from the EMS, regarding the extent and type of the event
- ☆ Data includes number, gender, severity score of the casualties and the admitting medical centers
- ☆ Evaluate the national blood inventory
- ☆ “Calculate” 2-3 blood units/casualty or 7 units /severe & moderate
- ☆ Contact the receiving hospitals for update and needs
- ☆ Supply needed blood (ground or air transportation)
- ☆ Conduct public appeal if severe shortage is expected





El-Aktza Intifada

9/2000-1/2004

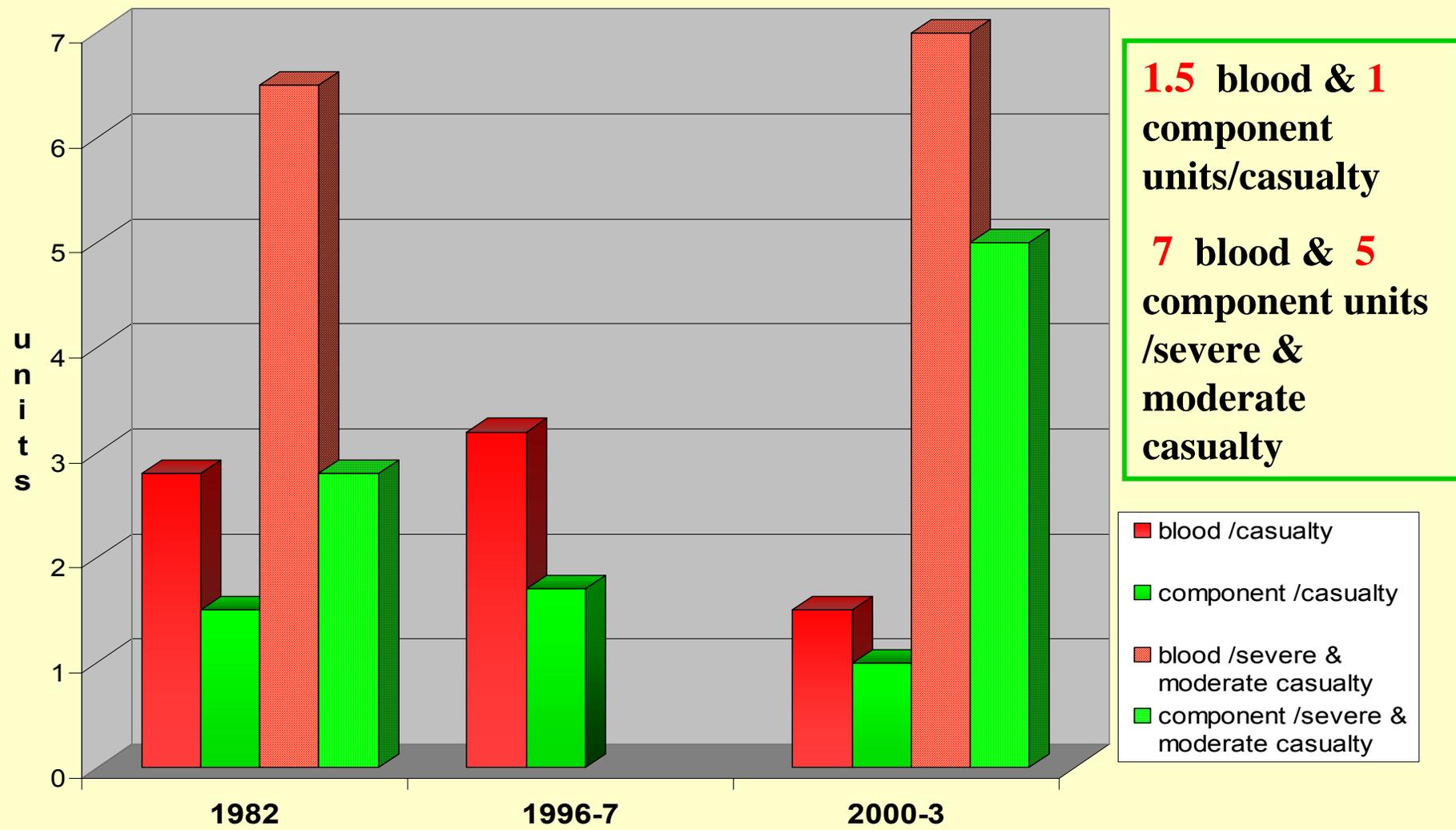
- 1,336 MCEs
- 6,069 Casualties (0.1% of the population)
 - 808 dead on the scene (13%)
 - **1263 severe/moderate (21%)**
 - 3,998 mild (66%)
- Blood requested in 92 MCEs (7%)
- **Total:15,018 units & components:**
 - 8,874 blood units
 - 6,144 components

*MDA Ambulance burned
in Jerusalem (Sep. 2000)*





Blood Supply / Casualty



1.5 blood & 1 component units/casualty

7 blood & 5 component units /severe & moderate casualty

- blood /casualty
- component /casualty
- blood /severe & moderate casualty
- component /severe & moderate casualty





Blood Donor Response to Ongoing Acts of Terrorism

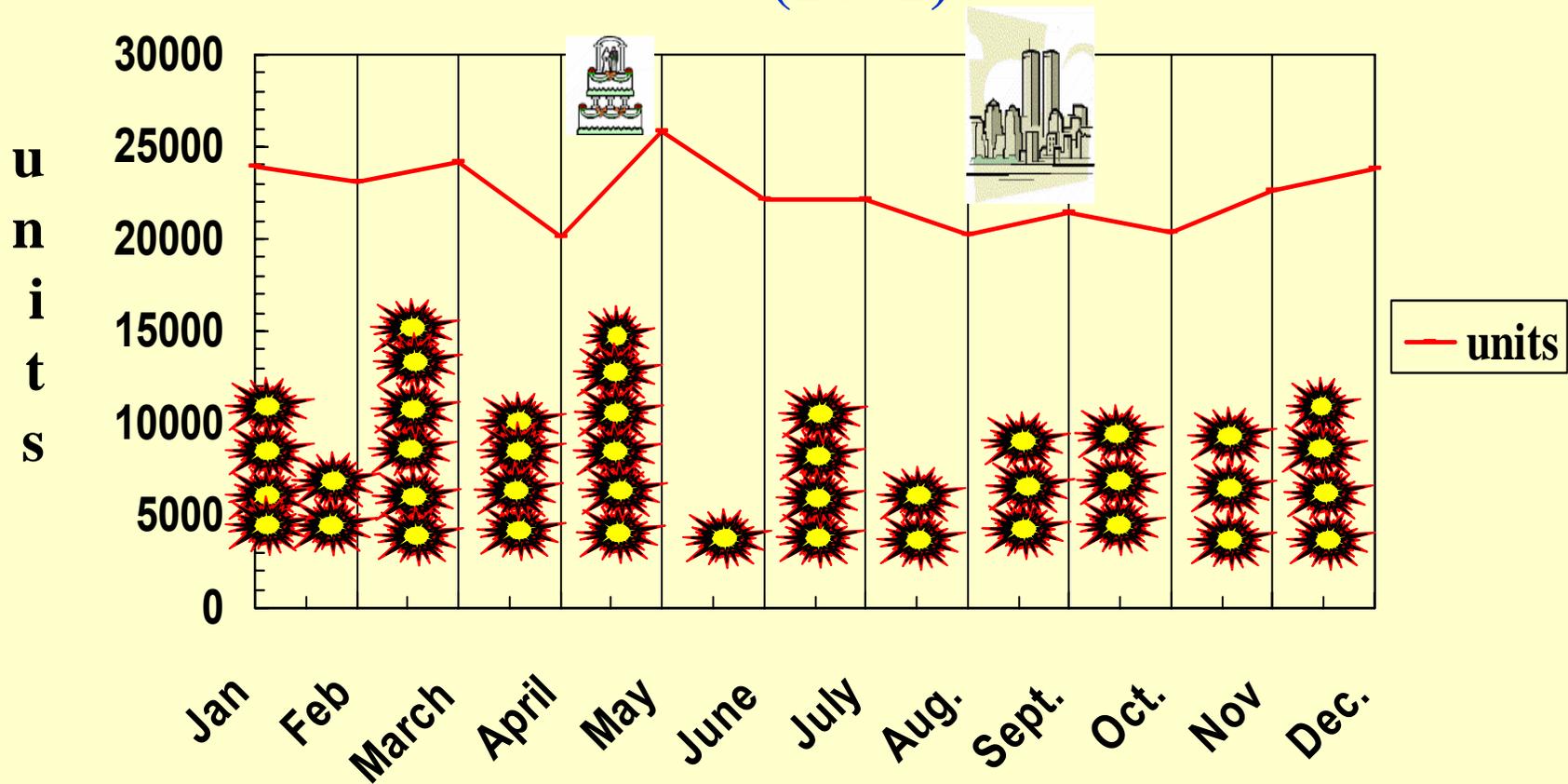
- 1,336 events (34 events/month)
- 6,069 casualties
- 85% were civilians
- An event may cause an immediate increase of ~ 20% in the daily demand for blood units and components

Suicide Bombing on “The Children Bus” Jerusalem
August 19, 2003





Effect of Terrorist Attacks and MCEs on Blood Donations (2001)





MCE following collapse of a wedding hall

- ☆ Total casualties: 333
 - 23 killed
 - 109 severely wounded
- ☆ MDA blood inventory: 5714 units
- ☆ National inventory: 7631 units
- ☆ Blood ordered: 384 units
- ☆ Components : 343 units
- ☆ **Public appeal** was initiated by government officials
- ☆ Donor response:

<u>date</u>	<u>planned</u>	<u>collected</u>
24/5/01	1295	1338
25/5/01	258	2572
Total:	1553	3910



Elizabeth Dalziel / AP





Israeli Blood Donor Response to the Sept 11th 2001 Attack

☆ A public appeal was conducted per request of the Israeli MOH

☆ Donor response:

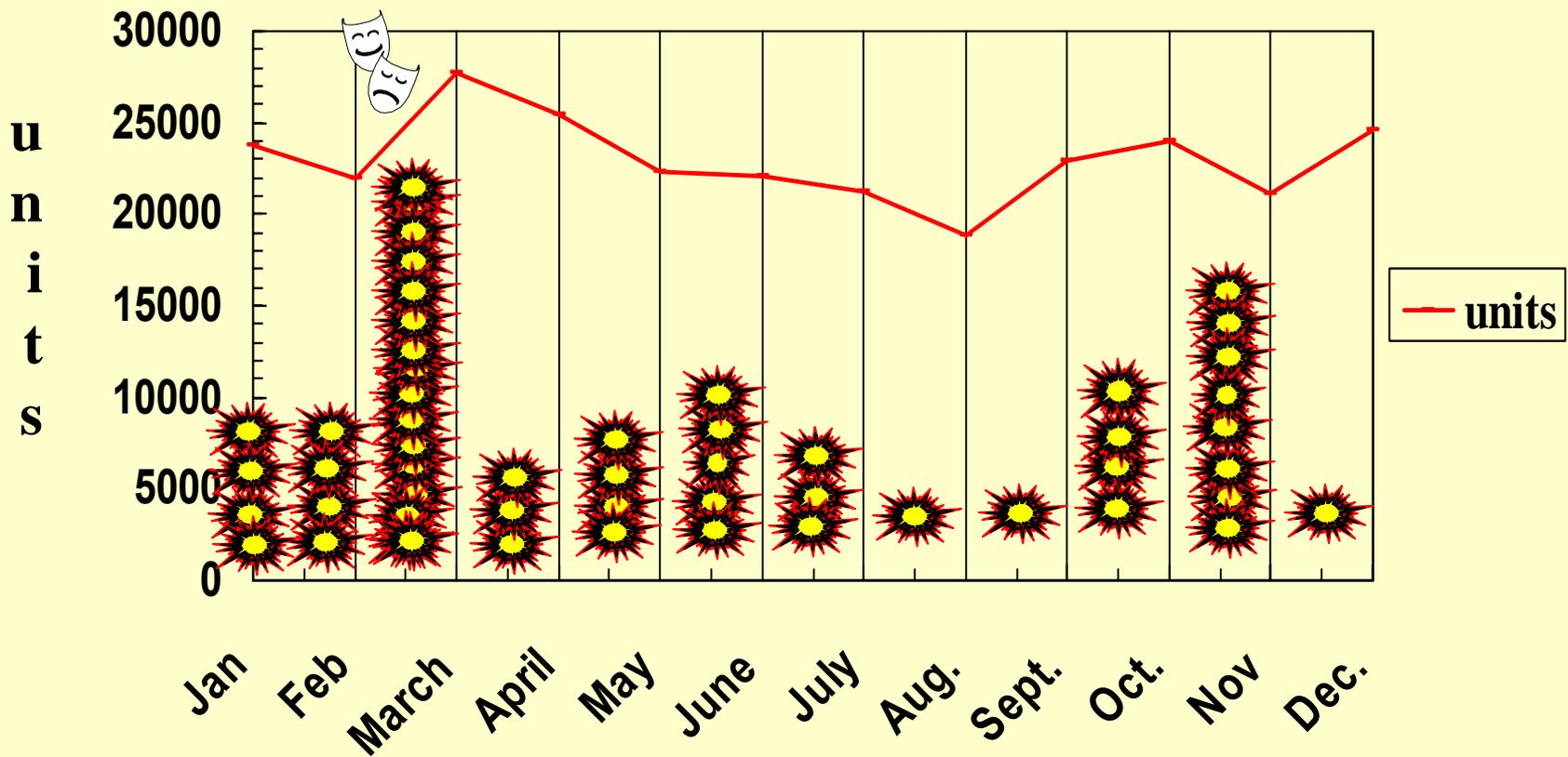
<u>date</u>	<u>planned</u>	<u>collected</u>
11/9	1240	1116
12/9	760	3085
13/9	1253	1626
14/9	492	807
Total:	3745	6634



Effect of Terrorist Attacks

on Blood Donations

(2002)





MCE following a terrorist attack, Jerusalem 2/3/02

- ☆ Total casualties: 56
 - 9 killed
 - 16 severely wounded
- ☆ MDA blood inventory: 3944 (!)
- ☆ National inventory: 5752 units
- ☆ Blood ordered: 110 units
- ☆ components: 93 units
- ☆ Donor response:

<u>date</u>	<u>planned</u>	<u>collected</u>
2/3/02	208	512
3/3/02	822	1295
4/3/02	1051	1280
5/3/02	1225	1509
Total:	3306	4596

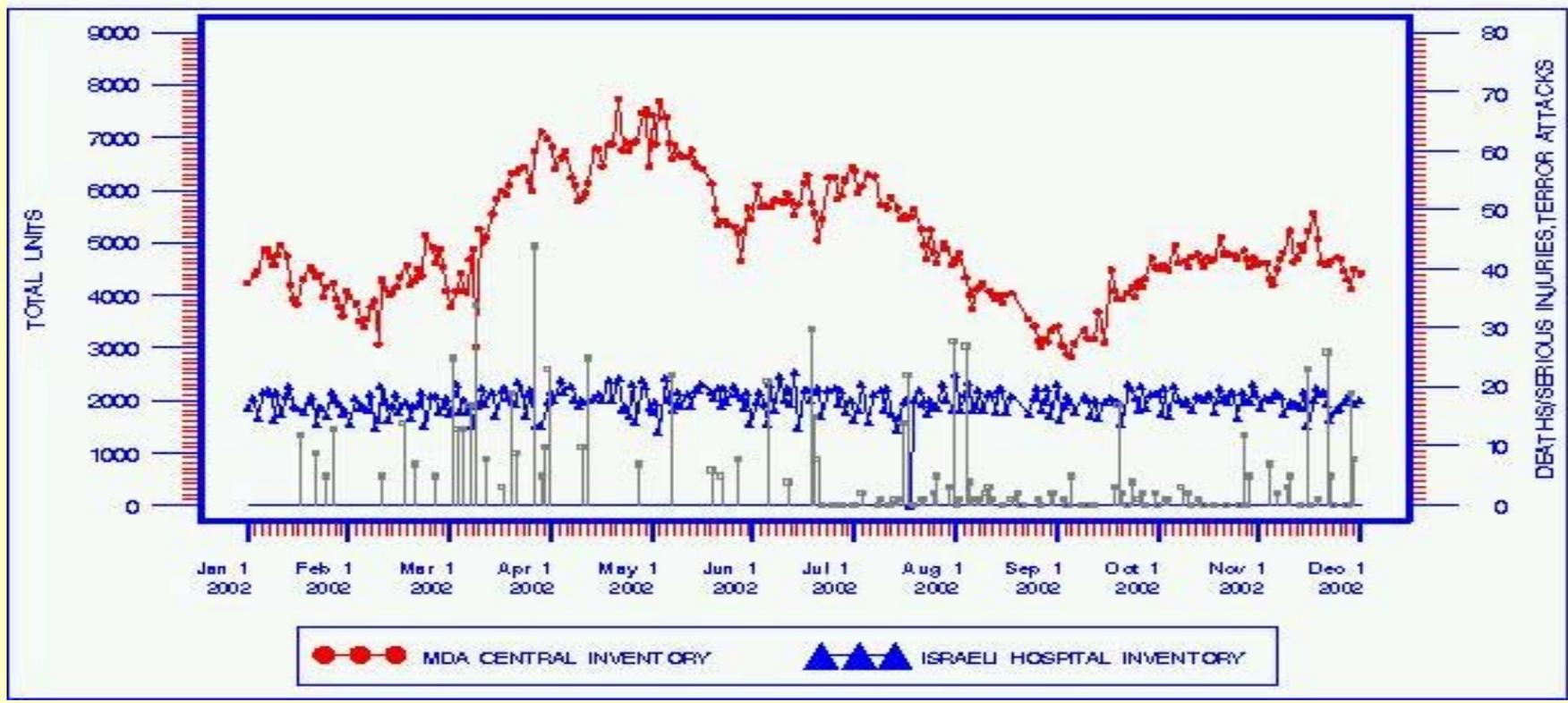
Blood drive in response to a public appeal, on Saturday night, following a Holiday





Effect of MCEs on the National Blood Inventory (2002)

Silverman, Yahalom, Nightingale, Sandler and Shinar, submitted for publication 2004





Summary (1)

- ✧ The Israeli system is a model of one national blood program, operated by a civil, central organization.
- ✧ The program is responsible for the national blood collection and supply, for both civilian and the military, at all times.
- ✧ Routine daily reporting of blood units inventory by all holders (hospitals, regional blood centers, and the national blood services) to the Health Authority is mandatory.



Summary (2)

- ✧ The central control of the national blood inventory and distribution, facilitate close monitoring and adequate response to unexpected events.
- ✧ Managing a "live" national inventory, prevents the need for an extra national reserve.
- ✧ Real-time reports by the EMS system from the MCEs scene, enable immediate response of blood supply during emergency situations



Thanks

- ✧ MDA volunteer blood donors
- ✧ MDA Blood Services employees and volunteers
- ✧ The organizers of the Advisory Committee meeting
- ✧ You-for your attention

