

Trends in use of multi-dose vaccine vials in UNICEF procuring countries

WHO informal consultation to develop further guidance
on vaccines for the UNEP-convened
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Objectives of study

- Identify trends in multi-dose vial use of DTP-based, hepatitis B, and measles-containing vaccines from 2000-2011
 - Review UNICEF Supply Division vaccine procurement database
 - Determine if there is an obvious trend of countries shifting from larger to smaller multi-dose vials or vice versa
- Assess factors that influence the use of different vial sizes, e.g. global supply and country-driven preference

Limitations of study

- Trends in UNICEF procurement are not representative of global trends. Study excludes:
 - Procurement through the PAHO Revolving Fund
 - Countries that procure independently
- Limited information on country preference
 - Difficult to ascertain drivers for use of a particular vaccine presentation
 - An aggregate of country-driven preferences is considered here



Assumptions

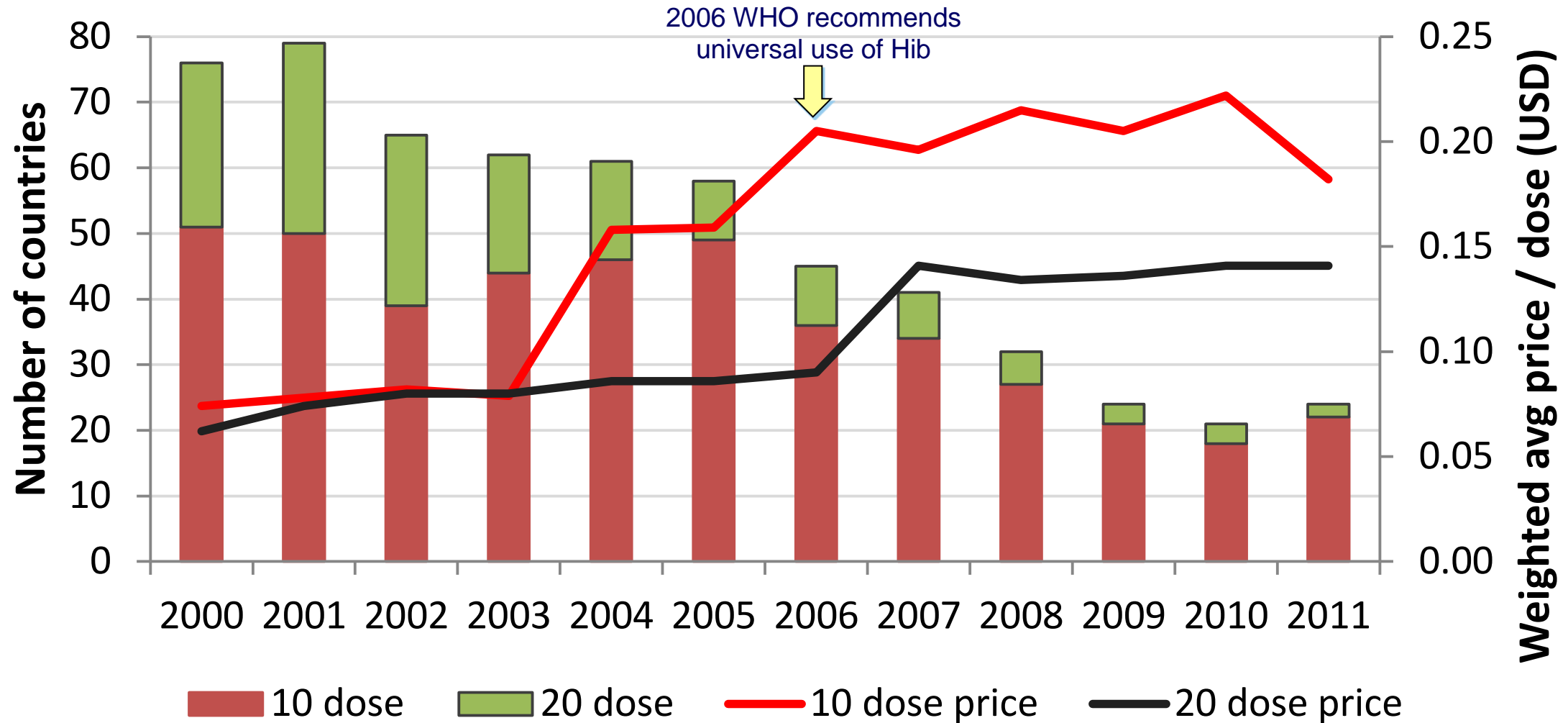
- Country-driven preference:
 - Price, e.g. HepB: \$0.2/dose for 10 dose vial vs. \$0.4/dose for 1 dose
 - Cold chain volume requirements, e.g. DTP-HepB/Hib: 23-26 cm³/dose for liquid 1 dose vial vs. 2.6 cm³/dose for liquid 10 dose vial
 - Programmatic feasibility, e.g. fully liquid preferred over liq/lyo
- Source of funding is considered external, internal, or mixed
 - External: donors funds from outside a country
 - Internal: self-financing from government resources
 - Mixed: both external and internal funding in a given year
- Annual weighted average price per dose was used to compare cost of vaccine presentations

DTP

- UNICEF procurement for 20 - 70 countries each year during 2000-2011 (70 in 2001; 20 in 2010)
- WHO prequalified: 1, 10, 20 dose vials in fully liquid form
- 2000-2011: Overall decline in DTP procurement as the use of combination vaccines has increased; mostly procured in 10 dose vials
- Country preference for 10 or 20 dose vials often flexible but 7 countries switched from 20 to 10 dose vials



DTP



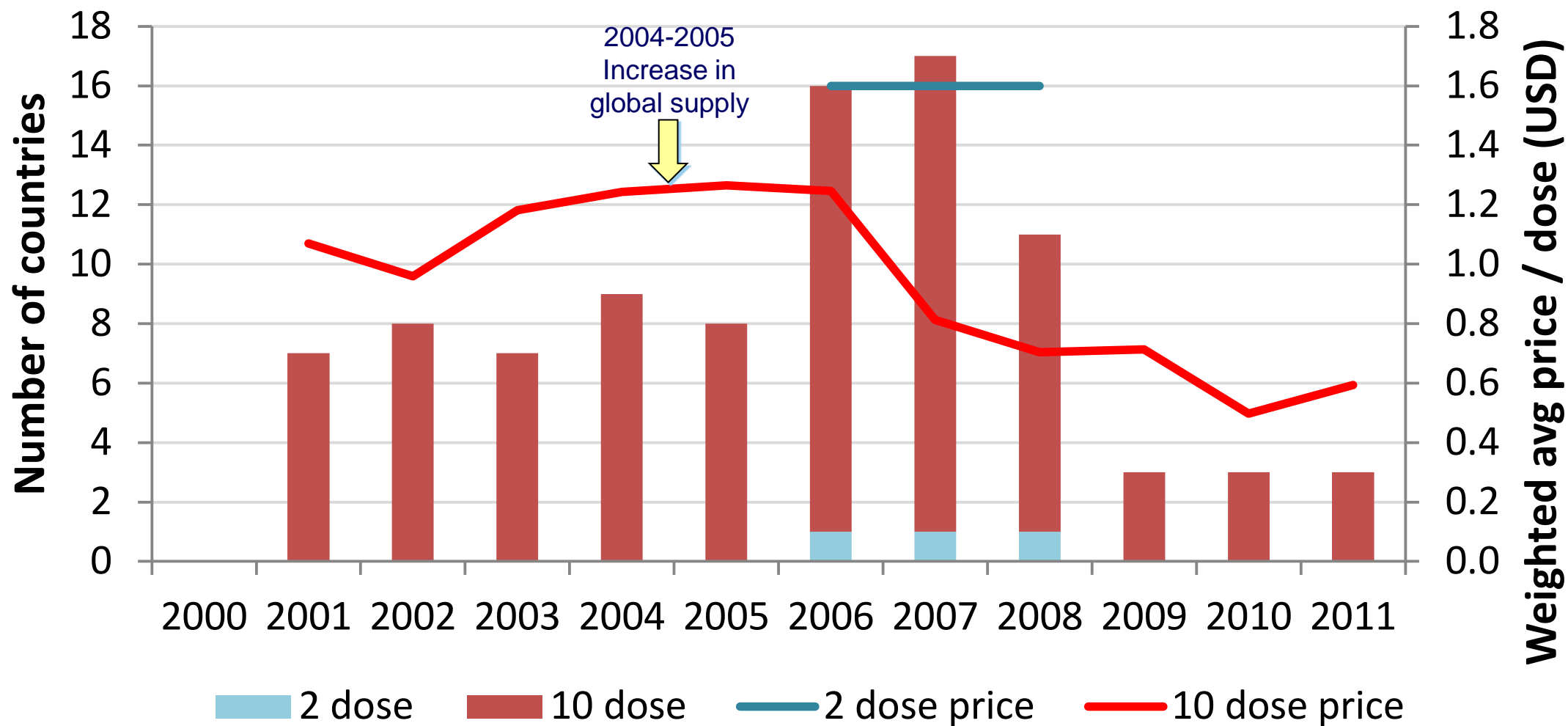
Note: a single country may procure more than one vaccine presentation in a given year; thus, one country may be counted in more than one vial size category.

DTP-HepB

- UNICEF procurement for 3 - 17 countries each year during 2000-2011 (17 in 2007; 3 in 2009, 2010, 2011)
 - GAVI co-financing 2001-2011, but will not continue after 2011
- WHO prequalified: 1, 2, 5, 10, 20 dose vials in liquid form
- Mostly procured in 10 dose vials
- 2006-2008: Increase in use after increase in global supply
2009-2011: Decline in use with increasing uptake of pentavalent
- No observed trends in use of different vial sizes



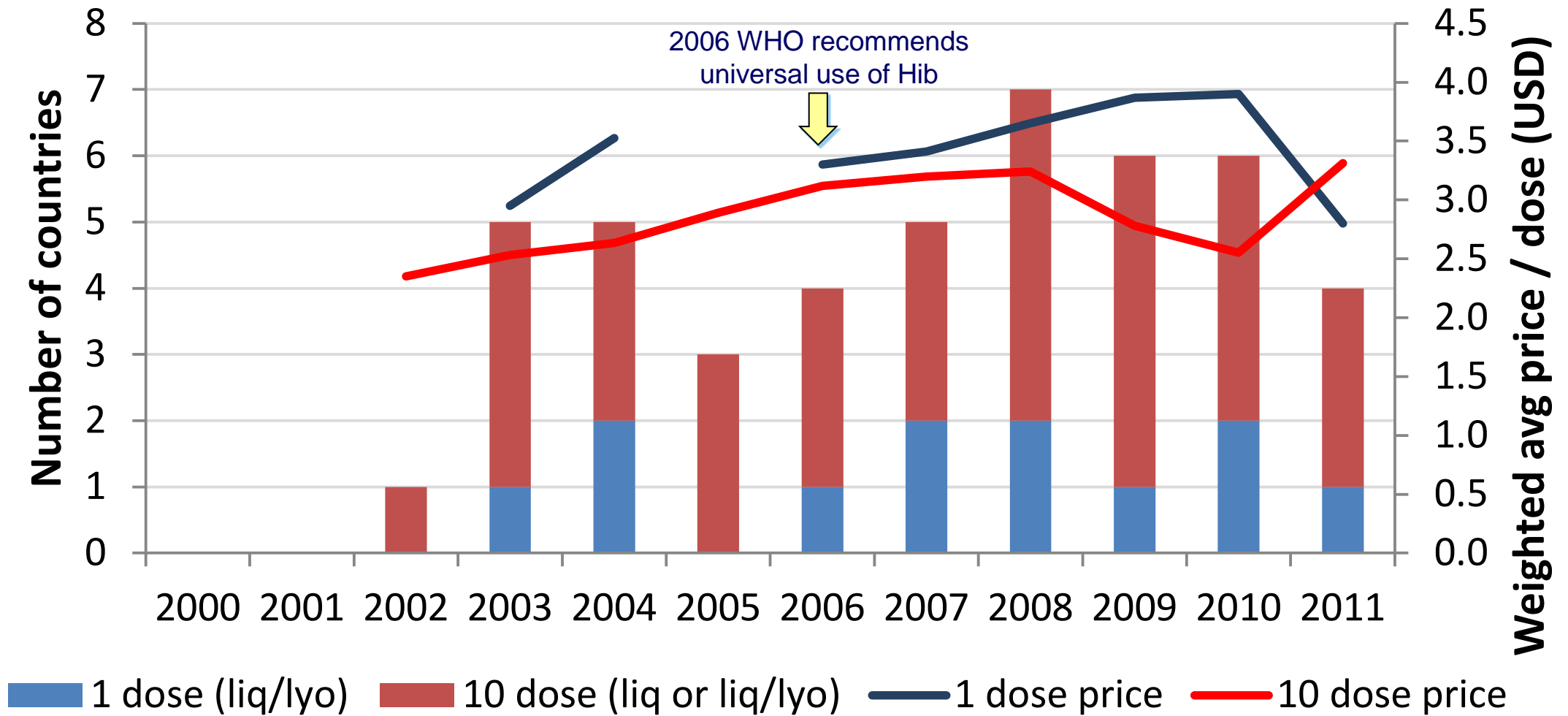
DTP-HepB



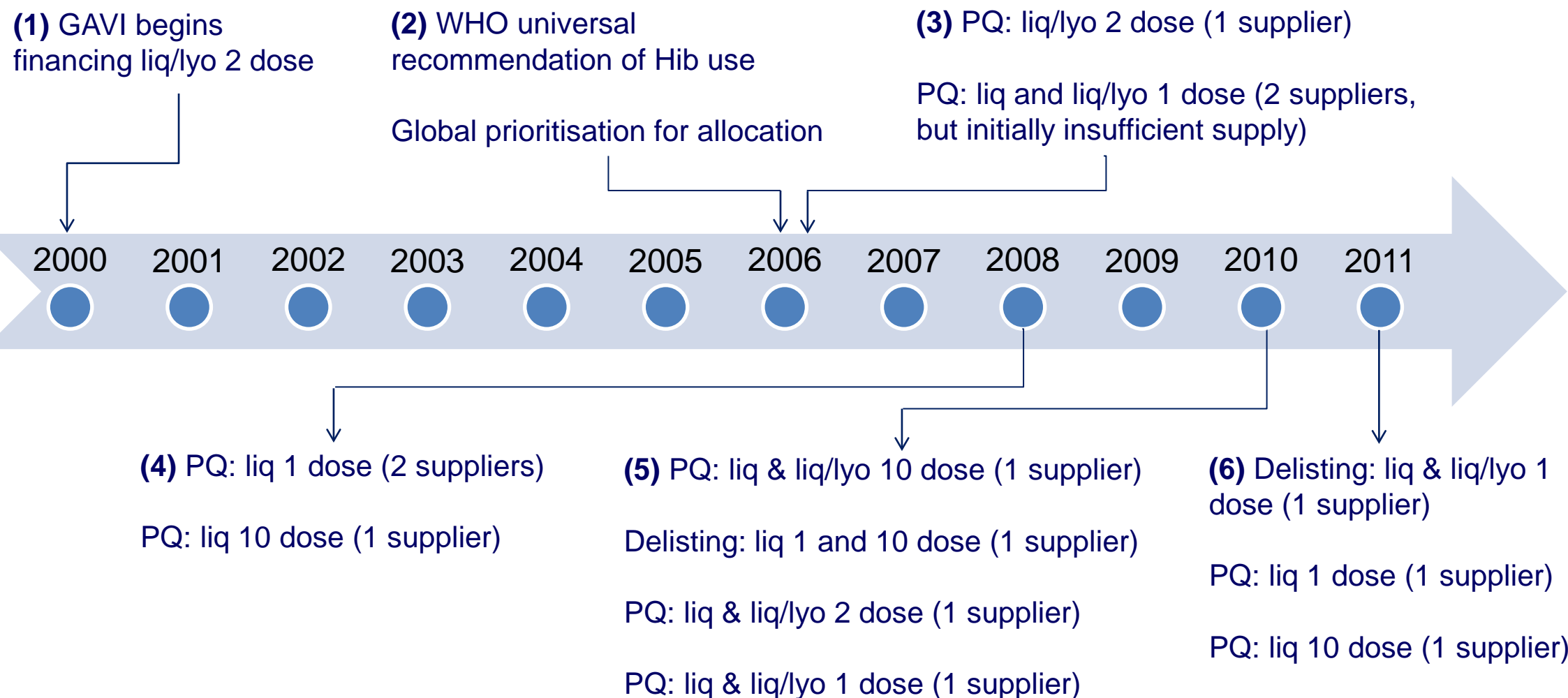
DTP-Hib

- UNICEF procurement for 1 - 17 countries each year during 2000-2011 (1 in 2002; 17 in 2007)
- WHO prequalified: 1 and 10 dose vials in both liq and liq/lyo
- Mostly procured in liquid 10 dose vials
- 2006: Increased uptake after universal Hib recommendation
2008-2011: Decline in overall use due to pentavalent, expected to continue to decline in future years
- No clear trend in use of different vial sizes

DTP-Hib



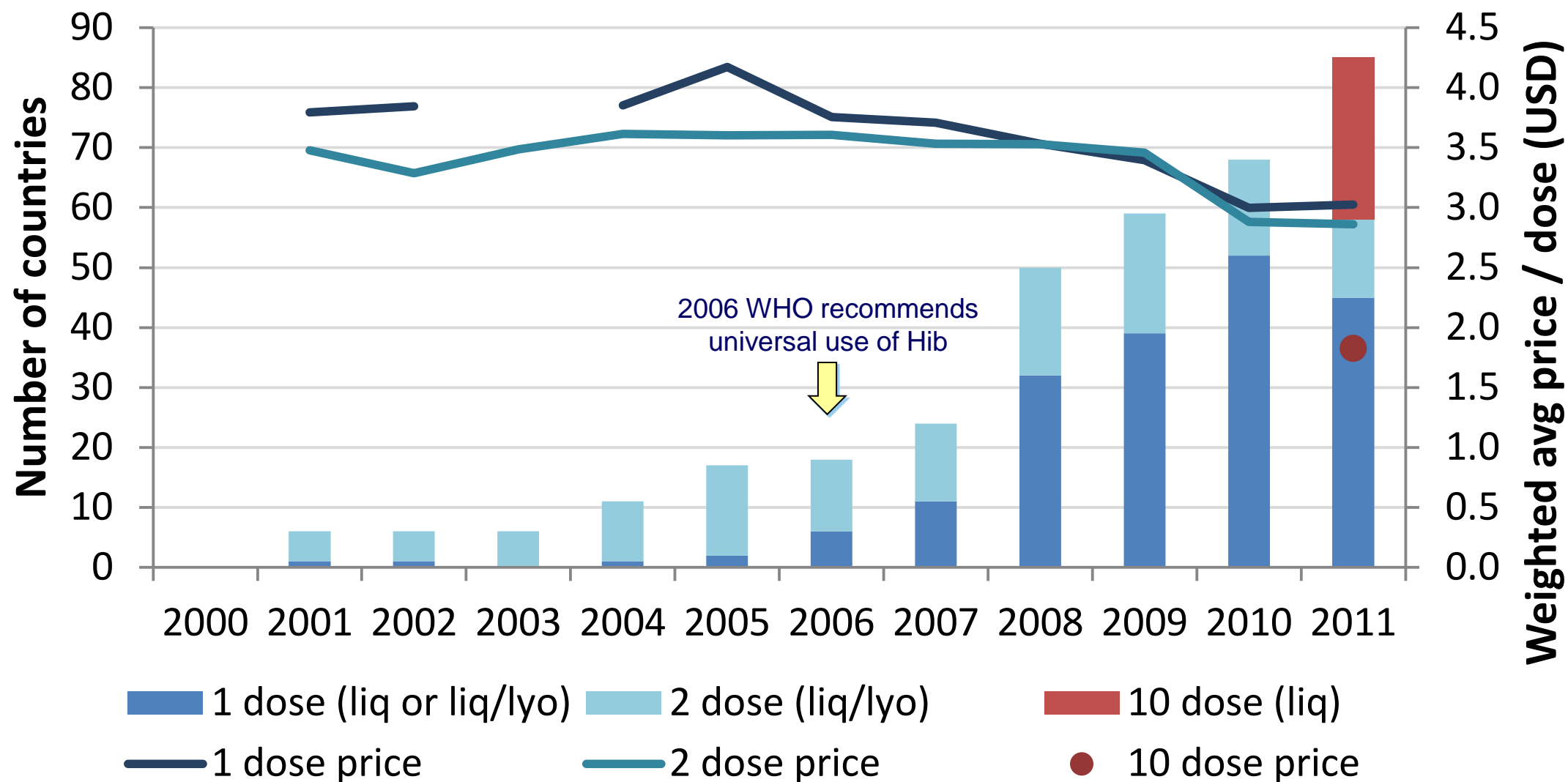
DTP-HepB/Hib Timeline



DTP-HepB/Hib

- UNICEF procurement for 6 - 70 countries each year during 2000-2011 (6 in 2001, 2002, 2003; 70 in 2011)
- WHO prequalified: 1, 2, 10 dose vials all in liq and liq/lyo
- 2001-2006: Mostly procured as liq/lyo 2 dose vials
2007-2010: Greater uptake in overall use; shift from liq/lyo 2 to fully liquid 1 dose due to increasing global supply of 1 dose vials and country-driven preference for fully liquid
2011: Shift from 1 dose to fully liquid 10 dose vials due to global supply (delisting of liquid 1 dose vial in 2010)

DTP-HepB-Hib

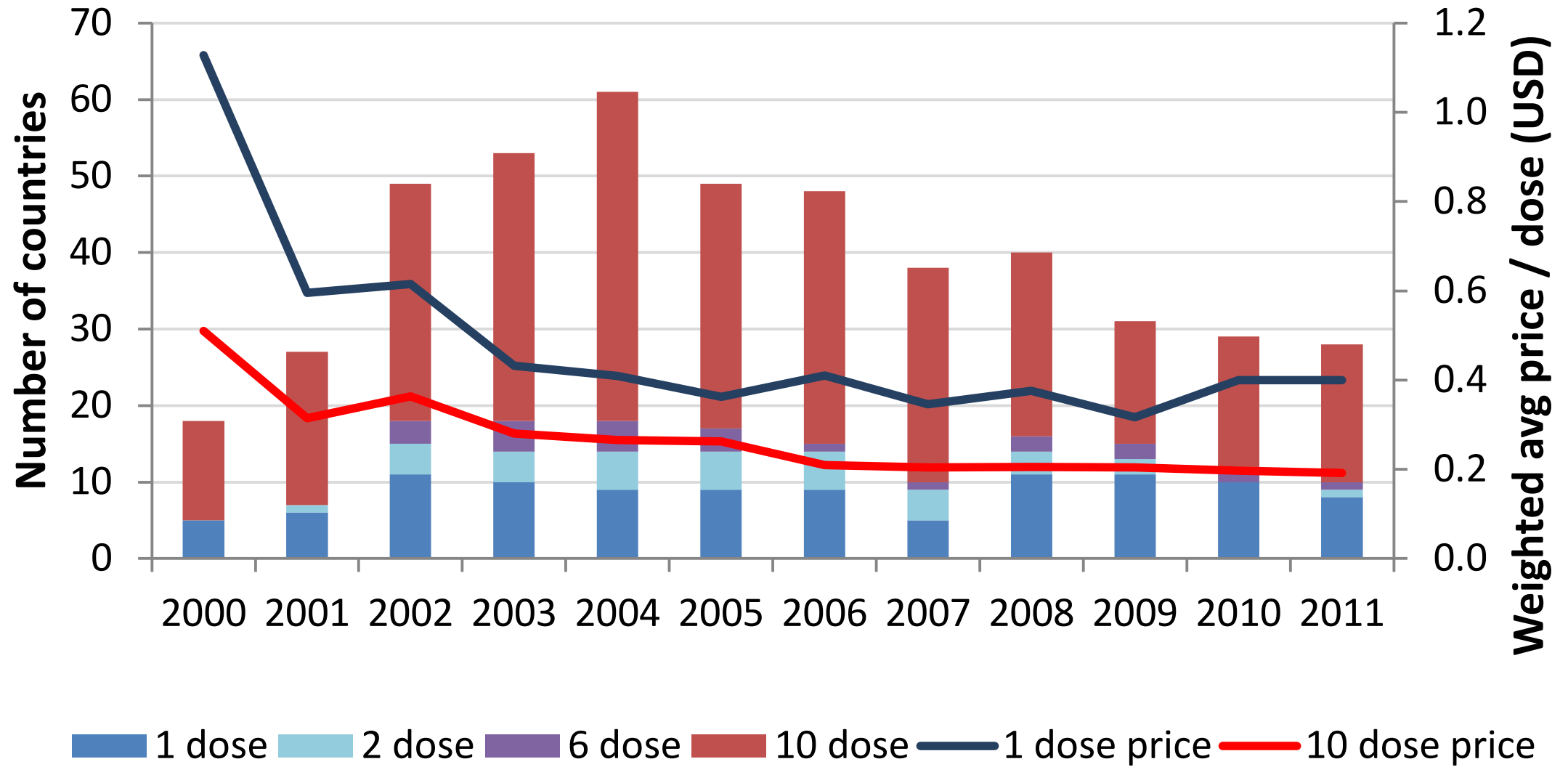


HepB

- UNICEF procurement for 15 - 45 countries each year during 2000-2011 (15 in 2000; 45 in 2004)
- WHO prequalified: 1, 2, 6, 10, 20 dose vials all in fully liquid form
- HepB is mostly commonly procured in 10 dose vials
- 6 countries switched from 10 to 1 dose vials due to increasing use of DTP-HepB/Hib (1 dose vials often used for HepB birth dose)



HepB



Measles

- UNICEF procurement for 54 -72 countries each year during 2000-2011 (72 in 2000; 54 in 2011)
- WHO prequalified: 1, 2, 5, 10, 20 dose vials all in lyo form
- Procured for both routine and supplementary activities
- Mostly procured in 10 dose vials
- No trends in vial size observed

MR

- UNICEF procurement for 1 -11 countries each year during 2000-2011 (1 in 2000; 11 in 2007)
- WHO prequalified: 1, 2, 5, 10 dose vials all in lyo form
- Procured for both routine and supplementary activities
- Procured only in 10 dose vials
- No trends observed

MMR

- UNICEF procurement for 3 -14 countries each year during 2000-2011 (3 in 2000; 14 in 2010, 2011)
- WHO prequalified: 1, 2, 5, 10 dose vials all in lyophilised form
- Mostly procured in 1 and 10 dose vials
- In the WHO European region, 5 countries switched from 10 to 1 dose vials due to country-driven preference
- 2009-2011: 5 dose vials procured in large quantities for a few countries

Conclusions

- The evolution of multi-dose vaccine vial use contains micro-patterns but no clear overall pattern was observed
 - Shifts in national use of larger to smaller vial sizes and vice versa were observed in the UNICEF procuring countries
 - The use of different multi-dose vial sizes is affected by global supply and country-driven preference, e.g. DTP supply, DTP-HepB/Hib supply and programmatic feasibility with fully liquid presentation
- Despite the availability of single-dose presentations, 10 dose vials are most commonly used and there is no evidence of increasing use of 1 dose vials
- Multi-dose vials are commonly used in UNICEF procuring countries and are likely to continue to be a vital part of immunization programs

Questions?



References

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WHO prequalified vaccines

Vaccine presentation and supplier information

Vaccine type	Doses per vial	Form	Current number of suppliers	Years prequalified (number of manufacturers*)	Years delisted	Production comment
DTP	1	liq	1	1995, 2003	-	No routine production - 1 manufacturer
	10	liq	2	1987, 1995, 2001, 2003	-	No routine production - 2 manufacturer
	20	liq	1	1987, 1995, 2003	-	No routine production - 2 manufacturer
DTP-HepB	1	liq	2	1998 (2), 2006 (2)	2010, 2011	Production discontinued - 1 manufacturer (2010)
	2	liq	1	1998	-	-
	5	liq	1	2004	-	-
	10	liq	3	1998, 2004, 2006 (2)	2010	-
	20	liq	1	2006	-	-
DTP-Hib	1	liq	1	2002, 2010	2011	-
	1	liq/lyo	2	2003, 2010	-	-
	10	liq	1	2002	-	-
	10	liq/lyo	1	2003	-	-
DTP-HepB/Hib	1	liq	3	2006 (2), 2008, 2010, 2011	2010, 2011	No production - 1 manufacturer
	1	liq/lyo	3	2006, 2010, 2011	-	-
	2	liq	1	2010	-	-
	2	liq/lyo	2	2006, 2010	-	-
	10	liq	1	2010	2010	
	10	liq/lyo	2	2010, 2011	-	-

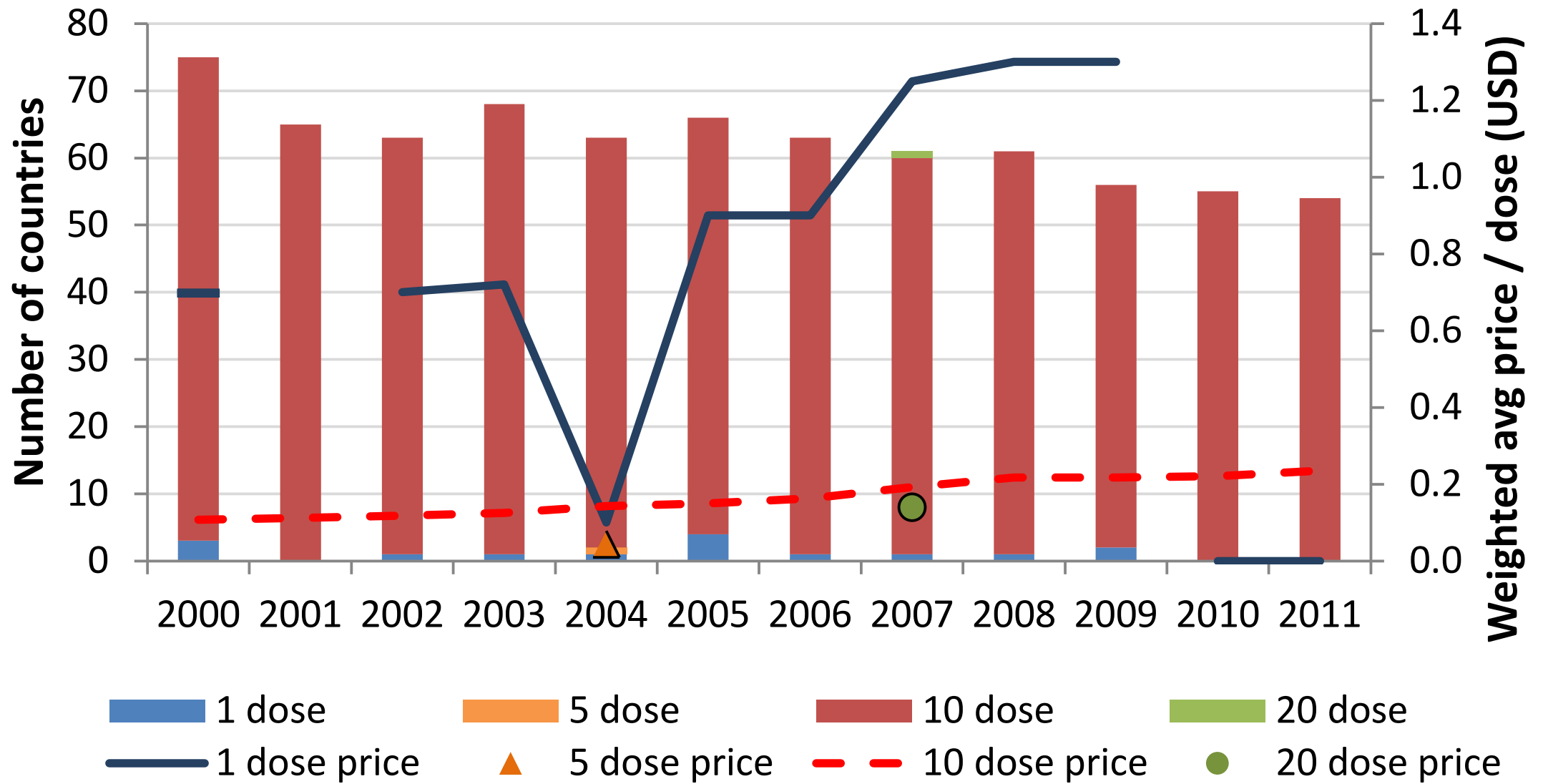
WHO prequalified vaccines

Vaccine presentation and supplier information (cont'd)

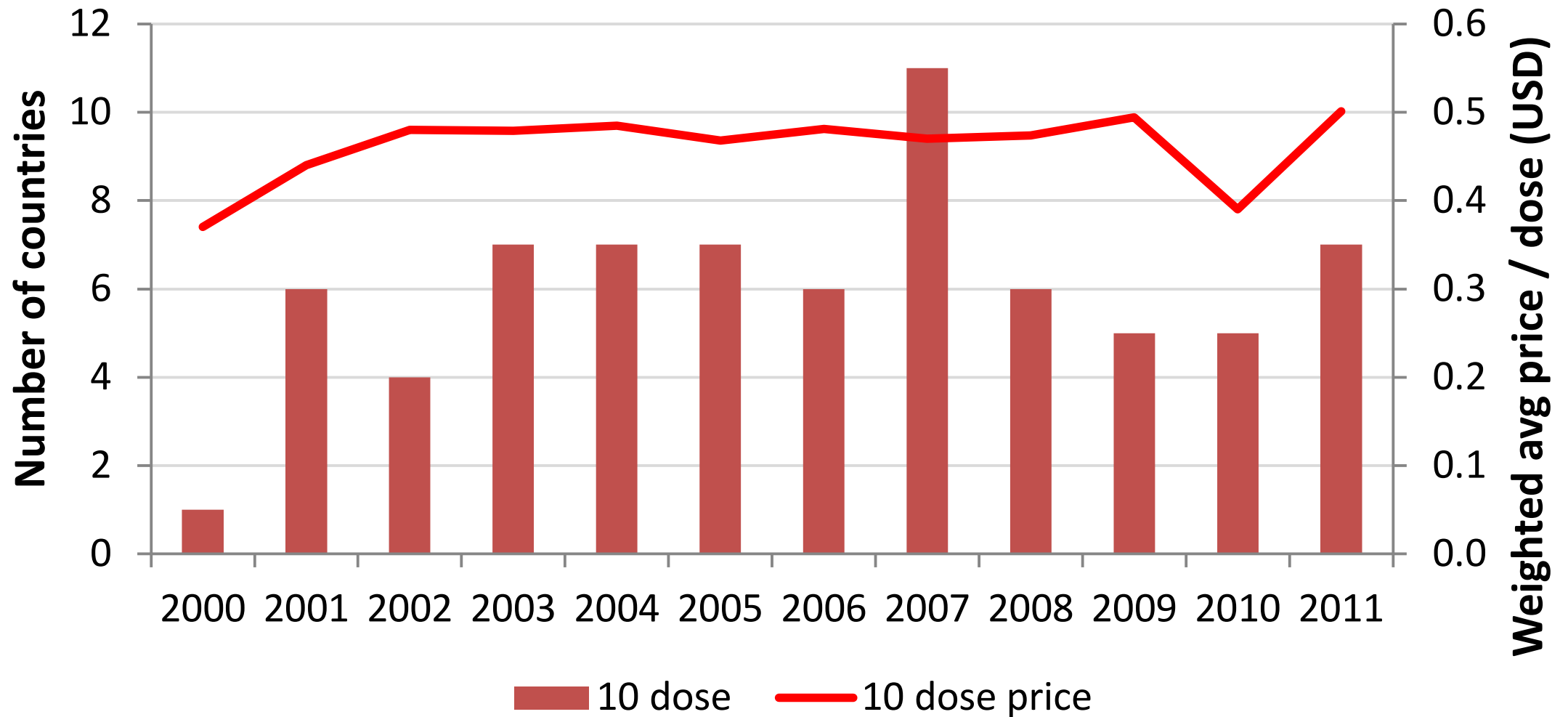
Vaccine type	Doses per vial	Form	Current number of suppliers	Years prequalified (number of manufacturers*)	Years delisted	Production comment
HepB	1	liq	8	1987, 1996, 2001, 2002, 2004 (3), 2006, 2008	2011	-
	2	liq	4	1996, 2002, 2004, 2008	-	-
	6	liq	3	1996, 2002, 2008	-	-
	10	liq	7	1987, 1996, 2001, 2002, 2004 (2), 2006, 2008	2011	-
	20	liq	3	1987, 2002, 2008	-	-
Measles	1	lyo	1	1987, 1993	-	Production discontinued - 1 manufacturer
	2	lyo	1	1993	-	-
	5	lyo	1	1993	-	-
	10	lyo	4	1993, 1998, 2002, 2006, 2010	-	Production discontinued - 1 manufacturer
	20	lyo	1	2006	-	-
MR	1	lyo	1	2000	-	-
	2	lyo	1	2000	-	-
	5	lyo	1	2000	-	-
	10	lyo	2	2000, 2004	-	No production - 1 manufacturer
MMR	1	lyo	4	2002, 2003, 2009, 2011	-	-
	2	lyo	2	2003, 2011	-	-
	5	lyo	1	2003	-	-
	10	lyo	2	2002, 2003	-	-

* 1 manufacturer unless otherwise specified

Measles



MR



MMR

