Countdown to 2015: changes in official development assistance to maternal, newborn, and child health in 2009–10, and assessment of progress since 2003

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Summary

Background Tracking of financial resources to maternal, newborn, and child health provides crucial information to assess accountability of donors. We analysed official development assistance (ODA) flows to maternal, newborn, and child health for 2009 and 2010, and assessed progress since our monitoring began in 2003.

Methods We coded and analysed all 2009 and 2010 aid activities from the database of the Organisation for Economic Co-operation and Development, according to a functional classification of activities and whether all or a proportion of the value of the disbursement contributed towards maternal, newborn, and child health. We analysed trends since 2003, and reported two indicators for monitoring donor disbursements: ODA to child health per child and ODA to maternal and newborn health per livebirth. We analysed the degree to which donors allocated ODA to 74 countries with the highest maternal and child mortality rates (Countdown priority countries) with time and by type of donor.

Findings Donor disbursements to maternal, newborn, and child health activities in all countries continued to increase, to $6511 million in 2009, but slightly decreased for the first time since our monitoring started, to $6480 million in 2010. ODA for such activities to the 74 Countdown priority countries continued to increase in real terms, but its rate of increase has been slowing since 2008. We identified strong evidence that targeting of ODA to countries with high rates of maternal mortality improved from 2005 to 2010. Targeting of ODA to child health also improved but to a lesser degree. The share of multilateral funding continued to decrease but, relative to bilaterals and global health initiatives, was better targeted.

Interpretation The recent slowdown in the rate of funding increases is worrying and likely to partly result from the present financial crisis. Tracking of donor aid should continue, to encourage donor accountability and to monitor performance in targeting aid flows to those in most need.

Funding Bill & Melinda Gates Foundation; World Bank; Governments of Australia, Canada, Norway, Sweden, and the UK.

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Introduction

In the past few years, financial commitments and interest in accountability for maternal, newborn, and child health have increased. In 2010, the G8 Muskoka Summit and subsequent Initiative on Maternal, Newborn and Child Health committed member countries to collectively spend US$5 billion between 2010 and 2015, towards the achievement of Millennium Development Goals (MDGs) for child survival (MDG 4) and maternal health (MDG 5A). The Global Strategy for Women's and Children's Health provided a platform for developed and developing countries alike to mobilise pledges valued at $40 billion.[1,2] The Commission on Information and Accountability for Women's and Children's Health called for all donors and developing countries to improve tracking of resources for women's and children's health.[3] The related independent Expert Review Group will regularly report to the UN Secretary-General on the implementation of the commission's recommendations.[4] With maternal, newborn, and child health high on the development agenda, and in view of high-level political and financial commitments, official development assistance (ODA) for these activities is expected to increase to countries most in need up to and beyond 2015.

This expectation is challenged by the present financial crisis. Donors, implementing public expenditure reductions at home, might find it difficult to provide additional funding to health in general and, more specifically, to maternal, newborn, and child health. A 2009 estimate[5] places the additional requirements to achieve health-related MDGs (with a focus on maternal and child health) in 49 low-income countries at $10 billion per year. Others have estimated additional required funding to be much higher, at $33·9 billion per year.[6] These estimates show that a large financing gap needs to be closed to achieve the MDGs. Additional issues are poor targeting of resources to countries most in need, and volatility in funding.

Monitoring of aid commitments and disbursements to maternal, newborn, and child health in the countries with greatest need is important for transparency and donor accountability. Our analysis includes updated estimates of ODA disbursements to such health activities for 2009 and 2010, and also updates previous estimates

for 2003–08 with some new allocation factors. We further examine allocation of ODA to the 74 Countdown priority countries with time and across donor types.

Methods

Data sources

We coded and analysed all aid activities for the years 2009 and 2010, from the Creditor Reporting System (CRS) of the Organisation for Economic Co-operation and Development with methods described previously.[7] We tracked disbursements to all recipient countries from all donors reporting to the CRS, including data from six donors that began reporting to the CRS in 2009, and six that began in 2010 (making a total of 43 donors reporting in 2010). We also reviewed private grants from the Bill & Melinda Gates Foundation (Gates Foundation), which began reporting its disbursements to the CRS in 2009. Because the Gates Foundation grants are not regarded as ODA,[8] when appropriate, the effect of their inclusion on our results is reported. Additionally, we analysed data for disbursements received by the 74 Countdown priority countries from a consistent set of 31 donors (23 bilaterals, six multilaterals, and two global health initiatives) who regularly reported data for 2003–10. We used definitions of the Organisation for Economic Co-operation and Development for bilateral aid as assistance for which the donor government specifies the recipient country or purpose of aid, or both, and multilateral aid as disbursements from the regular budgets of institutions with governmental membership (eg, UN agencies and the World Bank) for which the multilateral institution specifies the recipient country or purpose of aid, or both.

Statistical analysis

We analysed 470 310 disbursement records for 2009 and 2010,[9] to add data from the most recent years to our 2003–08 dataset.[7,10,11] We analysed records of disbursements across all development sectors to ensure completeness of data and identification of potential misclassification of health projects within the database. All records were coded against a previously developed framework.[7] This framework defined expenditures for maternal and newborn health as expenditures for activities whose primary purpose is to restore, improve, and maintain the health of women and their newborn children during pregnancy, childbirth, and the 7 day postnatal period. Expenditures for child health were defined as expenditures for activities whose main purpose is to restore, improve, and maintain the health of children between 1 week and 5 years of age. We assigned a code to each disbursement record, according to a functional classification of activities (eg, immunisation or childbirth care) and whether all or a proportion of the value of the disbursement contributed towards maternal, newborn, and child health. When the value was not specific, allocation factors were applied to apportion disbursements as previously described.[7] Additionally, we avoided double-counting of ODA by excluding disbursements described as core contributions to multilateral agencies or global health initiatives.

This analysis includes updated data sources for three allocation factors, and we developed a new method for allocation of unspecified regional disbursements. All changes were applied to the entire 2003–10 dataset. We applied revised estimates to the allocation factors of crude birth rate and the population of children younger than 5 years of age,[12] 2009 and 2010 percentages of general government expenditure on health as a percentage of total expenditure on health,[13] and latest estimates of children younger than 5 years of age living with HIV.[14] We used reported estimates of the number of people living with HIV in 2001 and 2009 to calculate annual estimates of children younger than 5 years living with HIV as a proportion of the total population living with HIV. For countries for which no HIV data were available, we applied a global average. We allocated unspecified regional disbursements to individual recipient countries on the basis of their year-specific share of direct regional disbursements. For example, Rwanda was allocated 2·3% of unspecified African regional disbursements for child health activities and 2·1% for maternal and newborn health activities on the basis of what it directly received from all donors relative to other countries in that region in 2010.

We analysed trends for 2003–10 in ODA to maternal, newborn, and child health from a consistent dataset of 31 donors to the 74 Countdown priority countries. Estimates of ODA were converted into constant 2010 US$ with the Development Assistance Committee deflators from the Organisation for Economic Co-operation and Development, which adjust for both price and exchange rate changes. We applied deflators specific to individual donors to bilateral disbursements and we applied an

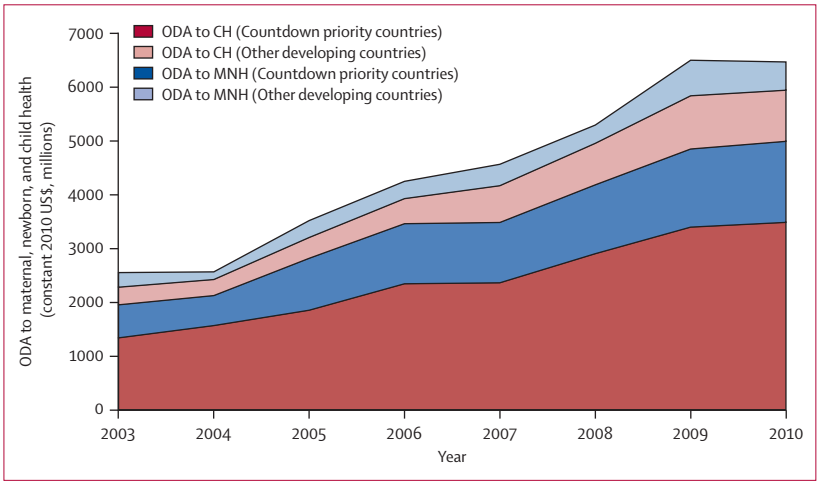

Figure 1: **Official development assistance to maternal, newborn, and child health, 2003–10**
Countdown priority countries are the 74 countries that account for more than 95% of all maternal, newborn, and child deaths. ODA=official development assistance. CH=child health. MNH=maternal and newborn health.

average deflator (calculated by the Development Assistance Committee and weighted by each donor's total ODA) to disbursements by multilateral institutions and global health initiatives. We analysed the type of aid modality (ie, general budget support, health sector support, projects) and main purpose of the project. Additionally, we monitored donor disbursements to each priority country through two indicators: ODA to child health per child and ODA to maternal and newborn health per livebirth.

We further assessed the extent to which the 31 donors targeted their development assistance to countries with the highest rates of maternal and under-5 mortality. We first examined whether targeting improved between 2005 and 2010, the 2 years for which estimates of relevant mortality data are available. Two sets of ordinary least squares regression models were estimated for child health and for maternal and newborn health. In the child health model, we used the natural logarithm of ODA to child health per child as the dependent variable and under-5 mortality rates as the independent variable.[15] In the maternal and newborn health model, we used the natural logarithm of ODA to maternal and newborn health per livebirth as the dependent variable and maternal mortality rates as the independent variable.[16] We tested for a difference in the slope between years by pooling the 2005 and 2010 data, fitting two random effects models where one model allowed slopes to vary by year and the other model assumed the same slope in both years, and examining the results of a likelihood ratio test between the two models.

We then examined whether the targeting of aid differed across types of donors (ie, bilaterals, multilaterals, and global health initiatives). Similar ordinary least squares regression models were estimated for child health and for maternal and newborn health. Dependent and independent variables remained the same but ODA was specific to each of the three types of donor. We additionally tested for a difference in slope across donors by pooling all ODA data by donor type, fitting two random effects models in which one model allowed slopes to vary by donor type and the other model assumed the same slope across all donor types, and examining the results of a likelihood ratio test between models. Our choice of random effects model rather than a fixed effects model was informed by a Hausman test. We used Stata (version 12) for all analyses.

Role of the funding source

The sponsors had no role in the study design, data collection, data analysis, data interpretation, or writing of the report. All authors reviewed drafts of the report, and the corresponding author had final responsibility to submit for publication.

Results

The total volume of worldwide ODA to maternal, newborn, and child health continued the upward trend shown by previous analyses with a 22·7% ($1204 million) increase in 2008–09, but, for the first time, a slight decrease, by 0·5% ($32 million), between 2009 and 2010 (figure 1, table 1). The 2008–09 increase, from $5307 million to $6511 million, was partly a result of six new donors in 2009 (named in table 2) reporting disbursements and a large increase in contributions from the GAVI Alliance. By contrast, the slight decrease in aid in

	2003	2004	2005	2006	2007	2008	2009	2010
Worldwide*								
All ODA (excluding debt forgiveness)	75387	83029	98305	110602	106414	119737	132360	138935
Annual rate of increase or decrease	..	10·1%	18·4%	12·5%	–3·8%	12·5%	10·5%	5·0%
ODA for health (% of all ODA)	7331 (9·7%)	8300 (10·0%)	10635 (10·8%)	11947 (10·8%)	13645 (12·8%)	15017 (12·5%)	16603 (12·5%)	17856 (12·9%)
Annual rate of increase or decrease	..	13·2%	28·1%	12·3%	14·2%	10·1%	10·6%	7·5%
ODA for MNCH (% of all ODA)	2566 (3·4%)	2580 (3·1%)	3534 (3·6%)	4262 (3·9%)	4579 (4·3%)	5307 (4·4%)	6511 (4·9%)	6480 (4·7%)
ODA for child health (% for MNCH)	1673 (65·2%)	1875 (72·7%)	2251 (63·7%)	2818 (66·1%)	3054 (66·7%)	3684 (69·4%)	4394 (67·5%)	4442 (68·6%)
ODA for maternal and newborn health (% for MNCH)	893 (34·8%)	705 (27·3%)	1283 (36·3%)	1443 (33·9%)	1525 (33·3%)	1623 (30·6%)	2117 (32·5%)	2037 (31·4%)
ODA for MNCH as % of ODA for health	35·0%	31·1%	33·2%	35·7%	33·6%	35·3%	39·2%	36·3%
Annual rate of increase or decrease in total ODA for MNCH	..	0·5%	37·0%	20·6%	7·5%	15·9%	22·7%	–0·5%
74 Countdown priority countries†								
ODA for MNCH (% of all ODA)	1961 (2·6%)	2132 (2·6%)	2824 (2·9%)	3468 (3·1%)	3490 (3·3%)	4189 (3·5%)	4855 (3·7%)	4997 (3·6%)
ODA for child health (% for MNCH)	1340 (68·3%)	1568 (73·6%)	1855 (65·7%)	2345 (67·6%)	2363 (67·7%)	2905 (69·4%)	3398 (70·0%)	3485 (69·8%)
ODA for maternal and newborn health (% for MNCH)	621 (31·7%)	564 (26·4%)	969 (34·3%)	1123 (32·4%)	1127 (32·3%)	1284 (30·6%)	1456 (30·0%)	1512 (30·2%)
Annual rate of increase or decrease in total ODA for MNCH	..	8·7%	32·4%	22·8%	0·6%	20·0%	15·9%	2·9%

Disbursements are in constant 2010 US$ (millions). ODA=official development assistance. MNCH=maternal, newborn, and child health. *Worldwide=ODA from all donors reporting to the Creditor Reporting System of the Organisation for Economic Co-operation and Development in that year to all developing countries. †Countdown priority countries=ODA from 31 donors to 74 Countdown priority countries.

Table 1: **Official development assistance to maternal, newborn, and child health, 2003–10**

2009–10 occurred despite a further six new donors in 2010 (named in table 2) reporting disbursements to such activities. The decrease meant a change in the volume of ODA to maternal, newborn, and child health from $6511 million in 2009, to $6480 million in 2010. Inclusion of private grants from the Gates Foundation increases the volume by $364 million in 2009, and $362 million in 2010, but does not change the 2009–10 rate of decrease. This initial sign of a levelling off in funding for maternal, newborn, and child health is against a backdrop of a

	2003	2004	2005	2006	2007	2008	2009	2010	Mean annual change (%)	Mean annual change, US$ (SD)
Bilateral aid agencies										
Australia	64·2	55·4	6·2	110·0	66·6	69·0	117·8	176·3	235·5%	16·0 (56·5)
Austria	3·9	4·4	5·0	6·8	7·2	6·0	5·8	5·6	6·2%	0·2 (0·9)
Belgium	14·5	0·8	31·3	37·6	53·7	42·6	45·7	55·0	538·1%	5·8 (15·3)
Canada	80·0	96·5	132·4	125·3	261·8	221·0	297·2	263·0	24·1%	26·1 (63·3)
Denmark	..	30·2	37·8	32·1	32·3	34·9	67·5	67·1	18·6%	6·2 (13·7)
Finland	9·1	0·0	0·0	17·1	19·4	22·2	21·4	20·6	NA	1·6 (7·9)
France	54·4	69·4	47·5	10·5	38·5	54·3	64·5	53·9	32·6%	–0·1 (23·5)
Germany	76·8	41·2	68·3	90·0	123·6	160·7	168·5	201·7	20·4%	17·8 (25·5)
Greece	18·9	2·9	15·1	8·1	14·1	2·9	6·9	11·8	70·6%	–1·0 (10·4)
Ireland	20·0	30·3	25·8	29·6	52·5	39·2	39·0	38·2	14·4%	2·6 (11·5)
Italy	26·1	26·1	3·2	32·6	41·2	44·4	42·8	41·3	122·7%	2·2 (15·5)
Japan	138·5	104·0	101·3	195·5	236·5	164·7	229·7	221·4	13·1%	11·8 (58·0)
Kuwait	..	..	..	..	..	..	..	8·2	NA	NA
Luxembourg	..	15·2	15·1	17·8	30·5	24·3	19·9	26·4	13·9%	1·9 (7·1)
Netherlands	89·1	67·6	88·1	86·4	124·2	113·0	164·2	113·1	7·6%	3·4 (35·5)
New Zealand	4·3	7·8	7·7	8·8	4·4	9·9	11·7	12·7	28·6%	1·2 (3·1)
Norway	49·5	42·6	45·7	59·8	77·3	92·6	153·5	101·4	15·0%	7·4 (33·8)
Portugal	2·5	2·9	4·2	2·9	1·1	1·6	2·5	5·1	25·5%	0·4 (1·5)
South Korea	..	..	..	13·1	14·7	24·6	40·8	44·7	38·6%	7·9 (6·6)
Spain	46·7	44·8	58·9	67·1	169·0	176·8	164·5	143·7	25·5%	13·9 (40·8)
Sweden	40·4	49·5	73·9	79·1	97·3	85·6	99·9	80·4	12·4%	5·7 (16·0)
Switzerland	21·0	23·3	15·2	29·8	23·5	28·3	32·4	32·1	12·1%	1·6 (7·6)
United Arab Emirates	..	..	..	..	..	..	29·1	18·7	–35·7%	–10·4 (NA)
UK	224·5	172·1	309·4	290·3	307·5	395·3	547·1	468·9	15·5%	34·9 (91·8)
USA	545·9	504·0	896·9	656·3	1006·1	1382·5	1367·6	1399·8	19·3%	122·0 (250·0)
Multilateral aid agencies										
AfDF	..	..	..	..	..	50·7	56·1	41·8	–7·5%	–4·5 (13·9)
AsDB Special Funds	..	..	..	..	..	..	..	81·1	NA	NA
Arab Fund (AFESD)	..	..	..	..	..	..	..	0·8	NA	NA
EU Institutions	65·1	71·7	166·4	323·1	248·3	338·8	384·4	379·2	37·4%	44·9 (76·8)
GEF	..	..	..	..	..	0·3	NR	NR	NA	NA
IDA	444·0	608·6	523·7	1127·0	396·4	321·9	529·4	337·3	11·8%	–15·2 (411·5)
IDB Special Operation Fund	..	..	..	..	..	..	10·8	10·2	–5·0%	–0·5 (NA)
IMF (SAF/ESAF/PRGF)	..	..	..	..	..	..	85·8	NR	NA	NA
IMF (Concessional Trust Funds)	..	..	..	..	..	..	..	42·1	NA	NA
OFID	..	..	..	..	..	..	10·7	8·6	–20·1%	–2·2 (NA)
UNAIDS	4·1	3·9	3·3	3·0	3·8	3·8	2·0	4·1	8·3%	0·0 (1·2)
UNDP	..	0·5	0·3	0·4	0·8	1·2	1·1	0·6	16·3%	0·0 (0·4)
UNECE	..	..	..	..	..	0·1	0·0	0·2	NA	0·0 (0·2)
UNFPA	226·8	70·5	185·9	173·5	140·9	131·9	142·8	137·7	9·7%	–12·7 (79·6)
UNICEF	94·6	88·0	110·1	94·1	291·0	193·4	175·6	179·8	24·6%	12·2 (89·8)
UNPBF	..	..	..	..	..	..	..	0·1	NA	NA
UNRWA	..	..	..	..	..	..	..	47·1	NA	NA
WFP	..	..	..	..	..	..	21·3	28·2	32·3%	6·9 (NA)
WHO	..	..	..	..	..	..	143·0	118·6	–17·1%	–24·4 (NA)

(Continues on next page)

	2003	2004	2005	2006	2007	2008	2009	2010	Mean annual change (%)	Mean annual change, US$ (SD)
(Continued from previous page)										
Global health initiatives										
GAVI Alliance	146·4	214·7	235·4	205·3	340·5	631·4	457·6	671·5	30·6%	75·0 (155·7)
Global Fund	54·8	130·9	319·8	328·4	354·9	437·5	750·8	779·3	56·1%	103·5 (110·3)
Total	2566·0	2580·0	3534·1	4261·5	4579·4	5307·3	6511·3	6479·7	14·8%	559·1 (471·3)

Disbursements are in constant 2010 US$ (millions). New donors reporting to the Creditor Reporting System of the Organisation for Economic Co-operation and Development in 2004 were Denmark, Luxembourg, and UNDP; in 2006 was South Korea; in 2008 were AfDF, GEF, and UNECE; in 2009 were the IDB Special Fund, IMF (SAF/ESAF/PRGF), OFID, United Arab Emirates, WFP, and WHO; in 2010 were the AsDB Special Funds, Arab Fund (AFESD), IMF Concessional Trust Funds, Kuwait (KFAED), UNBF, and UNWRA. NR=not reported. NA=not applicable. AfDF=African Development Fund. AsDB=Asian Development Bank. EU=European Union. GEF=Global Environment Facility. IDA=International Development Association. IDB=Inter-American Development Bank. IMF=International Monetary Fund. SAF=Structural Adjustment Facility. ESAF=Enhanced Structural Adjustment Facility. PRGF=Poverty Reduction and Growth Facility. OFID=OPEC Fund for International Development. UNAIDS=Joint UN Programme on HIV/AIDS. UNDP=UN Development Programme. UNECE=UN Economic Commission for Europe. UNFPA=UN Population Fund. UNICEF=UN Children's Fund. UNPBF=UN Peacebuilding Fund. UNRWA=United Nations Relief and Works Agency. WPF=World Food Programme.

Table 2: **Worldwide official development assistance to maternal, newborn, and child health by donor, 2003–10**

slowdown in the rate of increases in total ODA across all sectors in recent years (from a rate of 12·5% for 2007–08, to 10·5% for 2008–09, and to 5·0% for 2009–10; table 1). Similarly, the rate of increase in ODA for health (defined as aid categorised under health and population policies or programmes and reproductive health) has slowed from 10·6% in 2008–09, to 7·5% in 2009–10. Nonetheless, the volume of ODA disbursed for maternal, newborn, and child health activities in 2010 is in real terms more than 2·5 times its 2003 amount, increasing from $2566 million in 2003, to $6480 million in 2010.

The mix of sources of aid flows (bilateral, multilateral, and global health initiative) shows a changing landscape in funding for maternal, newborn, and child health during the 2003–10 period (figure 2, appendix p 1). In 2003, bilaterals accounted for 59·6% ($1530 million) of total aid flows for such activities compared with 32·5% ($835 million) from multilaterals and 7·8% ($201 million) from global health initiatives. By 2010, bilaterals had doubled their contributions in real terms and still accounted for more than half of disbursements, at 55·7% ($3611 million); however, distribution of the remaining half was equally split between multilaterals ($1418 million) and global health initiatives ($1451 million) with each contributing about a 22% share of the total volume. The decrease in the overall share provided by multilaterals was mainly driven by their disbursements to maternal and newborn health activities, which fell from a share of 16·1% ($413 million) in 2003, to 7·8% ($506 million) in 2010, despite 14 new multilaterals reporting disbursements since 2003. By contrast, the two global health initiatives have substantially increased their aid to maternal, newborn, and child health activities in real terms. From 2003 to 2010, contributions from the Global Fund increased from $55 million to $779 million, and contributions from the GAVI Alliance increased from $146 million to $672 million. The Gates Foundation also has an important role in development assistance to maternal, newborn, and child health. When including their private grants with ODA, the Gates Foundation accounted for 5·3% of

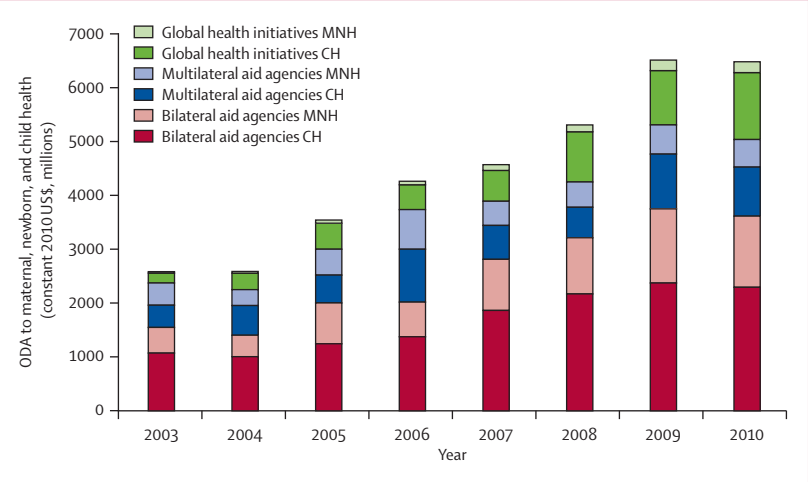

Figure 2: **Worldwide official development assistance to maternal, newborn, and child health, by source of aid flows, 2003–10**

ODA=official development assistance. MNH=maternal and newborn health. CH=child health.

funding to such activities in both 2009 ($364 million) and 2010 ($362 million), making it the seventh highest contributor in 2009 and sixth highest in 2010.

See **Online** for appendix

Disbursements from multilaterals amounted to $1563 million in 2009 (a 50·0% increase in real terms from 2008), and $1418 million in 2010 (a 9·3% decrease in real terms from 2009). This fluctuation is attributable to the entry of disbursement data from WHO and the International Monetary Fund in 2009, and important decreases from these donors in 2010. Volatility in disbursement levels from the World Bank also contributed to fluctuations. Furthermore, the World Bank is actually spending less in real terms in 2010 than it did in 2003 (ie, $322 million in 2010, compared with $428 million in 2003).

Bilateral donors collectively increased their aid by 17·0% ($543 million) from 2008 to 2009, but slightly decreased their aid by 3·4% ($129 million) from 2009 to 2010. The UK, the Netherlands, Norway, Canada, and Sweden

showed substantial increases from 2008 to 2009, in total an increase of $354 million (table 2). From 2009 to 2010, however, these same donors showed the largest decrease of bilateral donors in absolute terms and collectively accounted for a decrease of $235 million (table 2).

The total volume of ODA to maternal, newborn, and child health from the consistent dataset of 31 donors to the 74 Countdown priority countries has continued to increase and amounted to $4855 million in 2009, and $4997 million in 2010. Inclusion of unspecified regional disbursements increased the volume of aid received by these countries by an average of 5·1% during the 8 year period. Expenditures for child health accounted for about two-thirds of these activities and maternal and newborn health for the remaining third. Additionally, priority countries, where more than 95% of maternal, newborn, and child deaths occur,[17] collectively received more than three-quarters of all ODA to maternal, newborn, and child health activities during 2003–10 (table 1).

Table 3 shows the aid modalities used to disburse ODA to maternal, newborn, and child health in the 74 Countdown priority countries during 2003–10. Donors continued to prefer disbursement to projects, with 91·5% ($4571 million) of such ODA disbursed through projects in 2010. By contrast, in the same year, general budget support accounted for 1·6% ($78 million) and health sector support combined with basket funding accounted for 7·0% ($348 million). Relative shares of disbursements by aid modality have remained largely consistent during the study period. Within project-based aid, the share of development assistance that specifically targeted activities for maternal, newborn, and child health amounted to $2120 million (47·7%) in 2009, and $2251 million (49·2%) in 2010. The increase from 2009 to 2010 was driven by disbursements related to immunisation.

Although ODA for maternal, newborn, and child health to the 74 Countdown priority countries has continued to increase in real terms, its rate of increase has been slowing since 2008, from 20·0% in 2007–08, to 15·9% in 2008–09, and to 2·9% in 2009–10 (table 1). Most (44) of the 74 countries received an increase in ODA in 2009 for such activities (table 4). For these 44 countries, aid increased by an average of 36·8% ($20 million) in 2008–09. However, more than a third (27) of the 74 countries received decreased ODA in 2009–10, with aid to maternal, newborn, and child health decreased by an average of 20·3% ($21 million).

A large share of aid to maternal, newborn, and child health tends to be allocated to the same, populous countries. India, Pakistan, the Democratic Republic of Congo, Tanzania, and Nigeria received the largest amount of development assistance for such activities in 2010. These five countries collectively received 26·8% ($1339 million, table 4) of ODA to priority countries and have consistently been among the top ten recipients in the past 4 years. By contrast, Turkmenistan, Gabon, Mexico, Sao Tome and Principe, and Swaziland, all less populous countries (except Mexico), benefitted the least, collectively receiving 0·2% ($12 million) of ODA to priority countries. These countries have also been among the bottom ten recipients in the past 3 years.

We examined two indicators to monitor the extent to which disbursements respond to need: ODA to child health per child, and ODA to maternal and newborn health per livebirth, by recipient country (appendix pp 2–4). Across the 74 Countdown priority countries, median ODA to child health per child continued to increase during 2009–10, by $2·4 (2009 median $15·5, IQR 6·5–20·0; 2010 median $17·9, 6·7–25·0). Similarly, median ODA to maternal and newborn health per

	2003 (%)	2004 (%)	2005 (%)	2006 (%)	2007 (%)	2008 (%)	2009 (%)	2010 (%)
General budget support	68·9 (3·5%)	94·5 (4·4%)	95·3 (3·4%)	134·9 (3·9%)	150·0 (4·3%)	89·8 (2·1%)	78·2 (1·6%)	77·7 (1·6%)
Sector budget support	4·3 (0·2%)	5·9 (0·3%)	42·3 (1·5%)	81·8 (2·4%)	133·3 (3·8%)	128·4 (3·1%)	41·9 (0·9%)	63·3 (1·3%)
Basket funding	51·8 (2·6%)	78·3 (3·7%)	66·7 (2·4%)	47·1 (1·4%)	65·6 (1·9%)	168·1 (4·0%)	289·8 (6·0%)	285·1 (5·7%)
Projects	1836·3 (93·6%)	1953·5 (91·6%)	2619·6 (92·8%)	3203·8 (92·4%)	3141·2 (90·0%)	3802·3 (90·8%)	4444·6 (91·6%)	4570·9 (91·5%)
HIV (specific to MNCH)	3·1 (0·2%)	3·8 (0·2%)	21·2 (0·8%)	24·4 (0·8%)	83·8 (2·7%)	43·2 (1·1%)	63·6 (1·4%)	109·3 (2·4%)
Malaria (specific to MNCH)	7·5 (0·4%)	8·1 (0·4%)	90·6 (3·5%)	39·9 (1·2%)	56·4 (1·8%)	91·6 (2·4%)	190·9 (4·3%)	139·8 (3·1%)
Immunisation	459·1 (25·0%)	582·9 (29·8%)	475·7 (18·2%)	509·7 (15·9%)	634·1 (20·2%)	771·4 (20·3%)	638·2 (14·4%)	794·2 (17·4%)
Other child health activities	91·8 (5·0%)	89·0 (4·6%)	214·5 (8·2%)	162·7 (5·1%)	239·1 (7·6%)	178·0 (4·7%)	192·2 (4·3%)	198·9 (4·4%)
MNCH	408·7 (22·3%)	345·0 (17·7%)	703·5 (26·9%)	462·3 (14·4%)	640·7 (20·4%)	785·8 (20·7%)	1035·1 (23·3%)	1008·5 (22·1%)
HIV (not specific to MNCH)	38·4 (2·1%)	64·6 (3·3%)	68·6 (2·6%)	55·6 (1·7%)	125·7 (4·0%)	117·2 (3·1%)	150·5 (3·4%)	165·8 (3·6%)
Malaria (not specific to MNCH)	78·0 (4·2%)	122·6 (6·3%)	178·3 (6·8%)	331·2 (10·3%)	277·2 (8·8%)	436·1 (11·5%)	739·4 (16·6%)	800·8 (17·5%)
Nutrition	72·4 (3·9%)	85·6 (4·4%)	122·2 (4·7%)	315·7 (9·9%)	174·3 (5·5%)	166·3 (4·4%)	321·8 (7·2%)	324·5 (7·1%)
General health care, including health systems	677·2 (36·9%)	651·9 (33·4%)	744·9 (28·4%)	1302·3 (40·6%)	910·0 (29·0%)	1212·8 (31·9%)	1112·8 (25·0%)	1029·2 (22·5%)
Total	1961·3	2132·3	2823·9	3467·6	3490·1	4188·5	4854·5	4996·9

Disbursements are in constant 2010 US$ (millions). Percentage values represent the proportion of total aid except for project lines where percentage values represent the proportion of total project-based aid. Some percentages do not total 100% because of rounding. MNCH=maternal, newborn, and child health.

Table 3: **Official development assistance to maternal, newborn, and child health to the 74 Countdown priority countries by type of aid and purpose of projects between 2003 and 2010**

	2003	2004	2005	2006	2007	2008	2009	2010	Mean annual change (%)	Mean annual change, US$ (SD)
Afghanistan	46·3	46·4	81·6	83·3	116·8	187·6	251·2	214·4	26·7%	24·0 (38·2)
Angola	20·3	14·7	58·7	24·5	50·6	65·0	47·7	44·8	37·2%	3·5 (26·6)
Azerbaijan	1·5	2·0	4·0	3·1	3·6	5·4	6·3	7·5	29·7%	0·9 (1·0)
Bangladesh	79·5	90·7	136·0	178·8	77·2	136·6	187·9	191·9	11·5%	16·1 (55·8)
Benin	13·9	17·6	17·4	33·4	31·2	37·6	50·8	50·5	23·6%	5·2 (7·1)
Bolivia	29·3	27·0	21·6	58·1	35·8	29·2	33·5	35·4	11·5%	0·9 (17·9)
Botswana	3·1	1·2	1·5	1·5	2·5	59·1	4·9	4·6	315·5%	0·2 (32·0)
Brazil	10·4	9·6	3·7	5·8	3·6	6·4	6·8	10·7	9·9%	0·1 (3·4)
Burkina Faso	17·2	26·7	35·7	72·3	47·8	55·7	65·3	95·9	31·5%	11·2 (19·6)
Burma	13·1	11·4	20·7	19·6	16·6	36·8	32·5	43·3	26·9%	4·3 (9·3)
Burundi	12·3	13·3	20·5	18·9	28·6	36·1	33·3	52·7	23·5%	5·8 (7·7)
Cambodia	19·0	10·7	25·8	22·8	31·2	39·5	55·9	80·2	32·0%	8·7 (11·3)
Cameroon	9·7	13·9	26·3	28·4	19·4	22·3	30·8	25·2	18·5%	2·2 (7·5)
Central African Republic	3·4	8·1	7·9	9·0	11·8	13·2	12·4	13·4	26·8%	1·4 (1·8)
Chad	11·2	18·9	19·7	11·5	20·1	25·1	27·0	52·5	28·7%	5·9 (10·3)
China	63·6	62·6	54·5	65·0	86·2	58·7	61·0	60·2	0·0%	–0·5 (15·2)
Comoros	3·4	2·6	2·0	1·3	1·4	1·1	2·0	5·5	22·6%	0·3 (1·5)
Côte D'Ivoire	12·4	17·2	11·1	10·1	24·4	36·5	37·1	63·0	24·9%	7·2(11·0)
Democratic Republic of Congo	35·8	57·2	65·7	84·8	111·7	194·3	218·7	239·4	32·0%	29·1 (24·3)
Djibouti	1·4	4·3	5·7	5·8	13·8	6·3	8·0	5·0	34·2%	0·5 (4·8)
Egypt	10·7	14·6	34·4	48·5	29·5	30·4	25·9	30·1	21·9%	2·8 (12·6)
Equatorial Guinea	1·0	1·5	2·8	5·7	4·1	7·9	6·4	6·4	38·7%	0·8 (2·0)
Eritrea	21·0	17·1	17·7	12·7	16·0	12·2	12·2	27·4	11·2%	0·9 (7·0)
Ethiopia	105·8	72·6	96·6	235·6	228·8	194·6	308·8	215·3	22·3%	15·6 (83·9)
Gabon	0·9	3·5	5·1	4·3	4·1	2·3	3·8	1·4	40·3%	0·1 (1·9)
Ghana	57·7	76·4	89·8	98·3	78·4	80·5	117·2	115·9	11·6%	8·3 (17·6)
Guatemala	17·5	11·0	17·5	20·6	26·1	34·4	25·1	17·1	4·7%	–0·1 (7·5)
Guinea	8·9	8·5	17·0	12·1	12·4	13·6	18·3	29·5	24·9%	2·9 (5·5)
Guinea-Bissau	3·4	2·9	4·9	3·4	6·1	6·9	6·3	12·0	23·0%	1·2 (2·4)
Haiti	5·1	13·3	10·7	21·3	35·6	41·5	39·7	103·4	64·6%	14·0 (22·8)
India	260·8	350·1	413·8	221·5	336·4	357·2	348·6	357·7	6·6%	13·8 (101·2)
Indonesia	71·3	63·7	56·5	109·4	81·5	90·8	93·3	91·7	7·1%	2·9 (24·9)
Iraq	51·2	23·7	109·3	92·3	100·2	24·6	42·3	40·2	41·7%	–1·6 (49·1)
Kenya	62·2	61·6	86·3	110·3	88·6	133·8	160·3	201·5	19·9%	19·9 (23·6)
Kyrgyzstan	19·5	8·6	11·4	11·7	13·4	13·9	13·9	15·2	0·7%	–0·6 (4·6)
Laos	11·2	7·7	14·2	11·3	16·5	17·0	16·9	21·1	13·0%	1·4 (3·9)
Lesotho	3·1	3·6	1·6	2·0	4·3	6·7	5·1	12·3	30·8%	1·3 (3·1)
Liberia	9·3	12·1	7·9	16·5	24·3	37·5	52·6	51·5	32·7%	6·0 (7·2)
Madagascar	33·4	36·8	41·3	115·8	53·6	61·3	48·5	93·0	24·6%	8·5 (43·1)
Malawi	49·2	40·7	39·9	83·2	93·2	98·2	121·9	86·2	14·3%	5·3 (24·9)
Mali	19·6	26·8	36·7	67·7	50·3	54·8	65·4	86·1	26·2%	9·5 (15·0)
Mauritania	7·6	8·0	4·4	17·2	9·8	9·1	11·6	12·4	29·1%	0·7 (6·3)
Mexico	6·2	4·6	5·7	4·5	4·8	2·5	2·0	2·5	–8·3%	–0·5 (1·2)
Morocco	16·6	7·5	11·5	20·6	22·8	13·6	28·8	26·3	21·4%	1·4 (9·1)
Mozambique	63·9	75·4	64·0	109·1	108·2	134·3	117·3	147·2	15·6%	11·9 (22·9)
Nepal	21·7	12·9	23·9	29·1	37·0	53·0	50·1	75·8	25·3%	7·7 (11·5)
Niger	14·1	16·6	24·3	61·5	45·3	65·3	61·2	84·7	36·8%	10·1 (18·1)
Nigeria	65·6	89·8	106·9	150·4	185·4	257·3	442·1	215·6	25·0%	21·4 (123·4)
North Korea	4·5	3·5	5·3	4·3	9·6	6·8	9·3	11·1	13·1%	0·9 (2·7)
Pakistan	79·3	69·5	102·1	156·7	180·4	181·3	235·7	302·6	22·9%	31·9 (28·9)

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	2003	2004	2005	2006	2007	2008	2009	2010	Mean annual change (%)	Mean annual change, US$ (SD)
(Continued from previous page)										
Papua New Guinea	19·6	19·1	5·7	27·9	21·5	27·9	40·9	42·0	52·2%	3·2 (11·9)
Peru	15·0	15·4	28·1	19·7	21·9	21·9	65·9	27·6	29·8%	1·8 (24·6)
Philippines	23·0	15·3	13·5	18·0	31·1	24·3	40·6	57·9	16·8%	5·0 (10·7)
Republic of the Congo	4·5	4·9	4·2	2·9	6·7	8·8	4·8	19·9	46·0%	2·2 (6·2)
Rwanda	17·2	29·8	29·7	53·6	43·1	81·7	92·5	69·1	29·5%	7·4 (20·9)
Sao Tome and Principe	1·6	1·7	2·4	1·9	7·4	3·1	1·7	2·8	9·2%	0·2 (3·0)
Senegal	30·0	38·0	42·2	74·2	36·3	52·4	54·1	47·6	6·4%	2·5 (21·6)
Sierra Leone	8·5	9·3	12·7	18·8	34·0	26·4	40·6	42·3	24·9%	4·8 (8·0)
Solomon Islands	6·0	7·4	1·8	6·0	5·8	9·3	11·3	14·7	41·0%	1·2 (3·4)
Somalia	7·7	10·5	9·8	15·9	27·7	34·1	54·4	44·9	28·6%	5·3 (9·4)
South Africa	15·5	13·1	27·2	25·6	23·8	71·5	29·7	15·4	24·6%	0·0 (27·2)
Sudan	14·0	39·7	77·7	62·5	96·9	123·3	133·5	170·7	51·3%	22·4 (19·1)
Swaziland	1·1	0·3	1·3	1·1	2·6	3·1	4·4	3·6	47·2%	0·4 (1·0)
Tajikistan	8·3	8·4	7·2	9·4	9·8	15·2	14·7	22·2	17·9%	2·0 (3·3)
Tanzania	62·2	76·6	154·3	142·3	136·9	188·2	182·2	223·8	24·3%	23·1 (34·4)
The Gambia	5·4	6·5	9·5	4·1	8·0	6·7	8·0	11·6	15·2%	0·9 (3·3)
Togo	3·8	7·2	7·5	4·5	10·5	16·8	15·6	12·5	20·5%	1·2 (4·0)
Turkmenistan	1·2	1·6	1·9	1·9	2·6	1·3	0·9	1·2	4·3%	0·0 (0·7)
Uganda	65·2	76·5	84·6	179·1	94·7	114·6	119·9	110·3	9·7%	6·4 (52·4)
Uzbekistan	7·2	6·4	9·0	11·0	11·8	15·4	16·9	17·0	14·1%	1·4 (1·5)
Vietnam	48·8	42·4	56·7	55·9	47·5	66·9	62·8	75·1	8·0%	3·8 (11·2)
Yemen	14·4	27·8	50·6	32·1	37·3	39·3	33·5	43·4	24·6%	4·1 (13·4)
Zambia	56·9	64·3	83·1	79·2	91·7	99·1	90·6	62·2	2·8%	0·7 (15·9)
Zimbabwe	14·9	9·3	19·6	24·0	39·1	41·2	71·2	69·9	30·0%	7·9 (12·0)
Total	1961·3	2132·3	2823·9	3467·6	3490·1	4188·5	4854·5	4996·9	14·8%	359·3 (304·9)

Disbursements are in constant 2010 US$ (millions).

Table 4: **Official development assistance to maternal, newborn, and child health to the 74 Countdown priority countries, 2003–10**

livebirth continued to increase during the same period, by $5·9 (2009 median $23·5, IQR 12·9–39·1; 2010 median $29·4, 14·2–44·3). During 2003–10, median ODA to child health per child quadrupled, from $4·5 (2·5–8·4) per child to $17·9 (6·7–25·0), and median ODA to maternal and newborn health per livebirth doubled, from $11·5 (5·9–23·0) to $29·4 (14·2–44·3). Nevertheless, in 2010, several countries still received less than $2·0 per child (Mexico, Brazil, China, India, Turkmenistan, and Egypt) and per livebirth (Mexico, China, Brazil, and South Africa). Values for both indicators varied widely, partly because populous countries tended to receive far less ODA per head than did countries with smaller populations. For example, 2010 ODA to child health per child ranged from $0·1 in Mexico (total child population 11 million) to $142·3 in the Solomon Islands (total child population 79 962). Additionally, we identified a high level of temporal fluctuations to specific countries as measured by SDs (appendix pp 2–4).

Results from the child health regression models (table 5) suggest that overall targeting of ODA to the 74 Countdown priority countries with the highest rates of under-5 mortality has improved from 2005 to 2010. Both the 2005 (p=0·002) and 2010 (p<0·0001) log coefficients for child mortality were significant. In 2010, for each unit increase in the under-5 mortality rate, ODA increased 1·03%. By comparison, in 2005, for each unit increase in under-5 mortality rate, ODA increased by 0·76%. The regression results suggest that donors allocated more ODA to countries with higher under-5 mortality rates in 2010 relative to 2005. Results of the likelihood ratio test of the two random effects models suggest that the change in slope across years is weakly significant (likelihood ratio χ^2 2·83, probability >χ^2=0·0923).

The maternal and newborn health linear regression models (table 5) show the extent to which donors allocate ODA to countries with high rates of maternal mortality. Although the direction of log coefficients in our regression was positive and increased between 2005 and 2010, only the 2010 model was significant. For each unit increase in the rate of maternal mortality, ODA increased by 0·15% (p=0·004) in 2010, compared with 0·06% (p=0·12) in 2005. Results of the likelihood ratio test of the two random effects models show strong evidence

	Coefficient (95% CI)	Likelihood ratio	p value	r2
Child health model				
ln (ODA to child health per child, 2010)	0·0103 (0·0049 to 0·0157)	..	0·0001*	0·1662
ln (ODA to child health per child, 2005)	0·0076 (0·0029 to 0·0124)	..	0·0020*	0·1239
Maternal and newborn health model				
ln (ODA to maternal and newborn health per livebirth, 2010)	0·0015 (0·0005 to 0·0025)	..	0·0040*	0·1117
ln (ODA to maternal and newborn health per livebirth, 2005)	0·0006 (–0·0002 to 0·0014)	..	0·12*	0·0341
Child health by donor model				
ln (Bilateral ODA to child health per child, 2010)	0·0093 (0·0034 to 0·0152)	..	0·0020*	0·1207
ln (Multilateral ODA to child health per child, 2010)	0·0148 (0·0073 to 0·0223)	..	0·0001*	0·1784
ln (Global health initiatives ODA to child health per child, 2010)	0·0109 (0·0032 to 0·0186)	..	0·0060*	0·1004
Maternal and newborn health by donor model				
ln (Bilateral ODA to maternal and newborn health per livebirth, 2010)	0·0016 (0·0003 to 0·0028)	..	0·0130*	0·0827
ln (Multilateral ODA to maternal and newborn health per livebirth, 2010)	0·0017 (0·0008 to 0·0027)	..	0·0001*	0·1589
ln (Global health initiatives ODA to maternal and newborn health per livebirth, 2010)	0·0001 (–0·0013 to 0·0016)	..	0·88*	0·0004
Likelihood ratio tests				
Random effects model: year × under-5 mortality rate	..	2·83	0·0923†	..
Random effects model: year × maternal mortality rate	..	8·81	0·0030†	..
Random effects model: donor type × under-5 mortality rate	..	1·41	0·49†	..
Random effects model: donor type × maternal mortality rate	..	2·68	0·26†	..

*Probability >*t*. †Probability >χ^2. ln=natural logarithm. ODA=official development assistance.

Table 5: **Results of ordinary least squares regression models and likelihood ratio tests**

that the change in slope across years is significant (likelihood ratio χ^2 8·81, probability >χ^2=0·003).

Results from the regression models of donor type against under-5 mortality and maternal mortality (table 5) suggest that multilaterals did best in allocation of resources to countries with the highest rates of mortality in 2010. The difference across donor types, however, was not significant based on the likelihood ratio test of the random effects models (table 5).

Discussion

The total volume of worldwide ODA to maternal, newborn, and child health activities more than doubled during the 8 year period, rising from $2566 million in 2003 to $6480 million in 2010. For the first time in 2010, the trend of increasing aid volume was broken, with a slight decrease. Disbursements for both 2009 and 2010 included data from additional donors reporting to the CRS, yet the value of worldwide ODA for such activities still decreased slightly by 0·5%. By contrast, such aid flows to Countdown priority countries have continually increased in real terms during the 8 year period. Although the annual rate of increase was variable in early years of the study, the rate of increase has consistently been slowing since 2008.

The recent slowdown in the rate of increases, both worldwide and to priority countries, probably results partly from the present financial crisis. Results of one study projected a slower rise in both financial and in-kind overall assistance to health, estimating a reduction from 17% in 2007–08, to 4% in each year from 2009 to 2011.[18] However, other researchers have shown no significant historical relation between economic recession and disbursements of ODA for health in the short or long term.[19] Nevertheless, our study used actual disbursement data and showed that the rate of increase of ODA to health in general and to maternal, newborn, and child health has been slowing since 2008. The USA is the largest contributor to such activities and yet its spending on health overall has stagnated for the past 2 fiscal years.[20] In 2011, European Union member states were reported to be decreasing overall ODA for the first time since 2002.[21] Also in 2011, the Global Fund announced that it would not issue new grants until 2014.[22]

Initial signs that the rate of increase of ODA to maternal, newborn, and child health activities is slowing, and the large financing gap to reach MDGs 4 and 5A, underline the need to improve the efficiency and effectiveness of aid to such health activities. The international donor community has reaffirmed its commitment to the principles embodied in the Paris Declaration on Aid Effectiveness and Accra Agenda for Action.[23–25]

Additionally, donors are committed to provision of predictable aid, yet our data show that disbursements are highly volatile between years. For the 2003–10 period, several Countdown priority countries had sharp fluctuations in receipt of aid to maternal, newborn, and health activities. For example, aid for such activities in Ethiopia substantially increased by 143·7% in 2005–06, slightly decreased by 2·9% in 2006–07, further decreased

by 15·0% in 2007–08, subsequently increased by 58·7% in 2008–09, and finally decreased by 30·3% in 2009–10. Such volatility must challenge countries in planning and in covering recurrent costs, particularly for basic health care. For example, maternal health services are heavily dependent on recurrent cost funding,[26,27] and so can be greatly affected by fluctuating resources. Future analyses could formally assess the degree of volatility and examine its implications qualitatively and quantitatively.

Improved targeting to countries with the greatest need is still required. Our ordinary least squares regression model did not seek to assess the effect of donor funding on health outcomes but rather to examine the extent to which donors allocated aid to countries with greatest need—ie, with highest mortality rates. Analyses suggested that donors had collectively improved the targeting of their aid to countries with the highest rates of maternal mortality from 2005 to 2010. However, the trend in targeting of aid to child mortality was less clear. Although allocation of aid to where it is most needed has improved, the log coefficients are still low and therefore show room for improved responsiveness to need.

Our analysis confirms previously reported trends regarding the growing role of global health initiatives[18,28] and decreasing role of multilaterals.[11] This is partly a reflection of stagnating contributions from bilaterals to UN agencies. Contributions to UN agencies were $6550 million in 2003, and $6745 million in 2010.[29] Our analysis also shows increased spending by global health initiatives on interventions such as immunisation, insecticide-treated nets, and health systems strengthening. The Global Fund has expanded its funding for activities related to maternal and child health,[30] and the International Finance Facility for Immunisation has enabled a substantial rise in funding from the GAVI Alliance.

For the **Institute for Health Metrics and Evaluation** see http://www.healthmetricsandevaluation.org

For **AidData** see http://www.aiddata.org

For the **Netherlands Interdisciplinary Demographic Institute** see http://www.resourceflowsdata.org

Panel: Research in context

Systematic review

Our analysis used data from the Creditor Reporting System database (CRS), maintained and administered by the Organisation for Economic Co-operation and Development. We consider the CRS database to be an authoritative source of information on aid flows because it collects information on an annual basis from the 24 members of the Development Assistance Committee (DAC) and other non-DAC donors and multilateral institutions. Financial and descriptive details of aid activities are reported to the CRS according to a standardised reporting guideline which includes details by year, donor country, recipient country, and purpose of aid. We supplemented our findings by consulting other reports or databases, such as those of the Institute for Health Metrics and Evaluation, AidData, and the Netherlands Interdisciplinary Demographic Institute in collaboration with UNFPA.

Interpretation

This study adds new data to a multiyear trend analysis of actual disbursements of official development assistance to maternal, newborn, and child health. It shows that the rate of funding increase is slowing down and underlines the need for continued independent monitoring and analysis to promote donor accountability to financing maternal, newborn, and child health.

In view of the changing landscape in financing health, we explored whether different types of donor allocated resources against health needs differently in 2010. We identified some evidence that multilaterals did best in targeting disbursements to health needs. Indeed, some studies have shown that the allocation of bilateral aid is guided by determinants other than need, such as political leanings.[31,32] That multilateral aid is a decreasing share of total ODA to maternal, newborn, and child health is therefore concerning.

Other efforts to track financial resources to health development assistance include the Institute for Health Metrics and Evaluation, AidData, and the Netherlands Interdisciplinary Demographic Institute in collaboration with UNFPA. These organisations use varying mixes of data sources (eg, the CRS, government reports, donor publications), different data types (eg, commitments, disbursements, official and non-official development assistance for health), and different methods (eg, keyword searches, allocation factors) for data collection. Each approach might thus serve different purposes and has strengths and weaknesses previously identified.[33–35] Nonetheless, we believe our analysis adds value. Our manual coding of all projects ensures a more detailed level of tracking than that offered by some other methods. The reliability of our methods has been previously tested,[7] and our use of consistent definitions and a standard coding framework of maternal, newborn, and child health activities uniformly applied to all donors allows us to produce estimates of actual disbursements that are comparable with time and across donors and recipients.

Although some uncertainty remains about the assumptions for apportioning funds not specific to maternal, newborn, and child health (eg, health systems funding, general budget support) and the appropriateness of some of our allocation factors, our methods allow for an estimate of the contribution of such funds with country-specific allocation factors. Additionally, our methods are applied to disbursement records at the project level, rather than at some higher, aggregate level. Nonetheless, some limitations to our analysis merit mention and discussion.

The first limitation relates to external resource flows not included in this study. Although we analysed data for private grants from the Gates Foundation separately and also included other development partners newly reporting to the CRS, our dataset does not include support from non-profit organisations nor from BRICS (Brazil, Russia, India, China, South Africa) or other emerging donors who do not report to the CRS. The inability to accurately track aid flows from BRICS is a constraint faced by other researchers.[18,28] These donors are estimated to provide 9–10% of global ODA.[36]

The second limitation is that we did not track disbursements for sexual and certain reproductive health activities, such as family planning and treat-

ment of sexually transmitted infections, which have an important role in improvement of maternal health. However, methods to track a broader range of sexual and reproductive health activities, as defined internationally,[37] have been developed according to recommendations from the Commission on Information and Accountability for Women's and Children's Health,[3,38] and will be reported separately.

The third limitation is a mismatch between mortality indicators and disbursement categories in the regression models. Under-5 mortality rates included neonatal deaths whereas disbursements for newborn health were included with maternal health expenditures. We have continued to use conventional indicators rather than attempt to remove neonatal deaths from under-5 mortality rates and add them to maternal mortality rates. We felt that use of standard mortality statistics was acceptable in view of their use as proxies for need.

The fourth limitation remains the imperfect quality of data, because donors sometimes do not adhere fully to agreed reporting guidelines. Although quality is improving, we encountered instances where the descriptions of disbursements did not match the sector code, were vague or not specific, or were provided in languages that required online translation services.

The fifth limitation, from a perspective of total financing effort for maternal, newborn, and child health, is that we do not attempt to capture domestic resource flows to maternal, newborn, and child health activities. External sources of finance amounted to only 26·0% of total health expenditures in low-income countries in 2010,[13] and domestic resources are crucial for sustainable financing in the long term. After recommendations from the Commission on Information and Accountability for Women's and Children's Health,[3,38] a methodology and data collection instrument are being developed to track such expenditures at the country level. Such data would help explore the relation between ODA disbursements and domestic funding in specific countries.

Tracking of total resources would offer the opportunity to assess resource allocation between child health on the one hand, and maternal and newborn health on the other. Currently, there is no clear view of appropriate allocation of resources across the continuum of maternal, newborn, and child health activities,[39,40] and this is a priority research topic when data permit.

As we approach 2015, and begin to look beyond it, additional investments are needed if we are to reach MDG 4 and MDG 5A. The financing gap remains large, showing the importance of continuing to press for increasing resources to maternal, newborn, and child health. The initial signs of a levelling off of external aid flows further emphasise the importance of efficiency gains and strategic priority setting for women's and children's health. Development of investment frameworks could encourage more targeted financial support, increase efficiency gains, and promote accountability.[41] Such frameworks could support financing to maternal, newborn, and child health on the basis of strengthened country plans. We reiterate previous recommendations that countries should ensure maternal, newborn, and child health receives appropriate priority in international and domestic resource allocation.[3,38]

This independent analysis has shown the value of multiyear trend analysis. It shows that, for the first time, the upward trend in worldwide ODA to maternal, newborn, and child health has been broken. Although disbursements to the 74 Countdown priority countries have continued to increase, they have done so at a slower rate since 2008 than previously. Donors have increased their commitments to maternal, newborn, and child health and it is crucial to check that these commitments are seen in actual disbursements and priorities in country plans. Now, more than ever, independent monitoring and analysis of the quantity and quality of ODA is necessary to assess donor accountability and to understand and mitigate the potential effect of present economic conditions on funding for maternal, newborn, and child health.

Contributors

JH analysed the data and wrote the first draft of the report. CP contributed to resolving analytical issues. AM helped to develop the methods. All authors contributed to analysis of the data, reviewed successive drafts, and approved the final version of the report.

Conflicts of interest

We declare that we have no conflicts of interest.

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