

Integrated Healthcare Technology Package: Introduction

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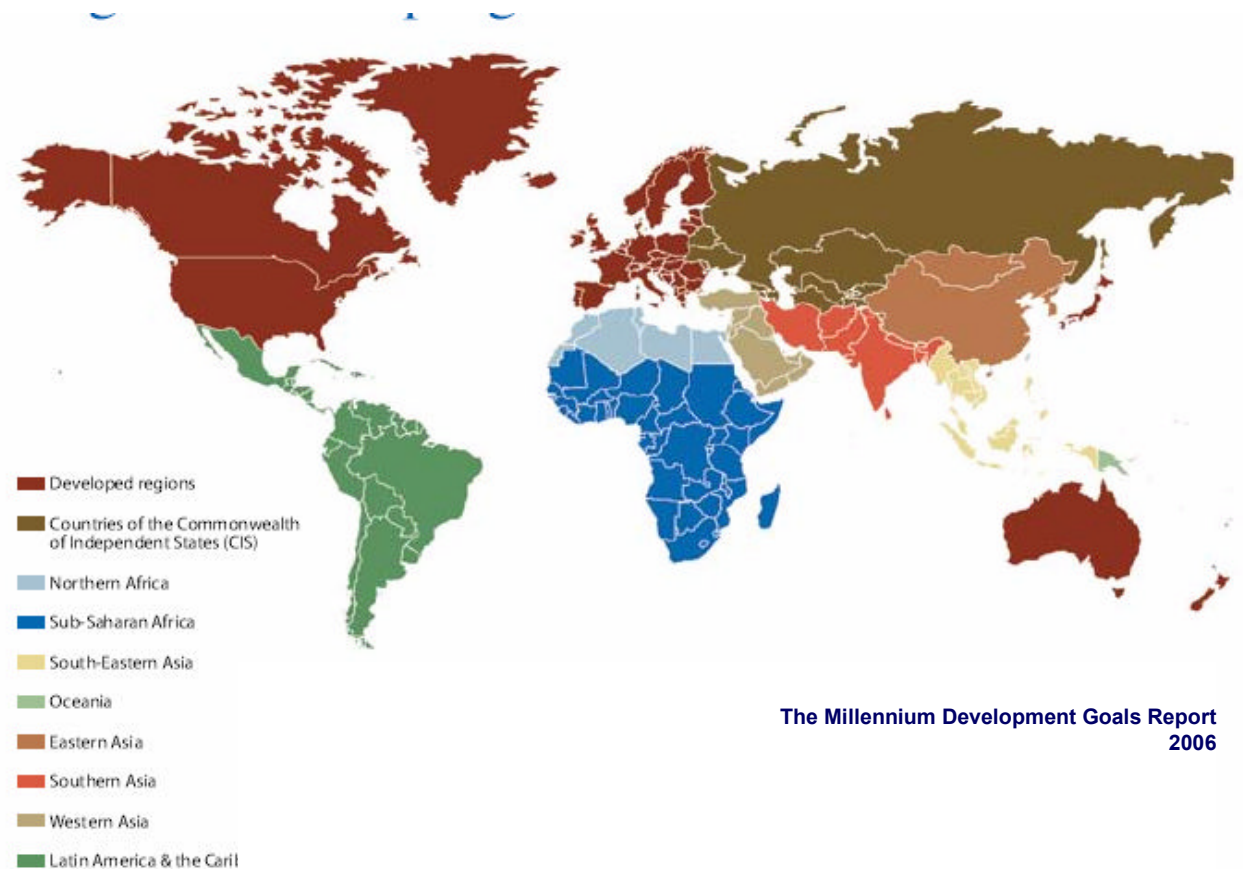
Why iHTP ...



MILLENNIUM DEVELOPMENT GOALS

TO BE ACHIEVED BY 2015

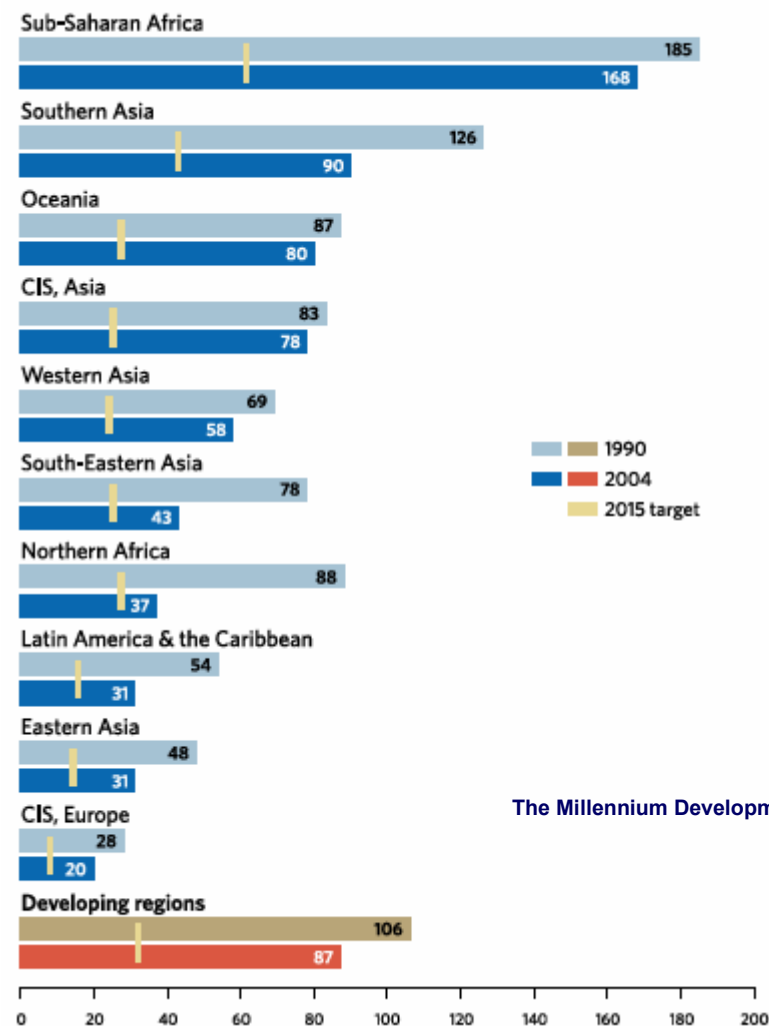
1. Halve extreme poverty and hunger
2. Achieve universal primary education
3. Empower women and promote equality between women and men
4. **Reduce under-five mortality by two-thirds**
5. **Reduce maternal mortality by three-quarters**
6. **Reverse the spread of diseases, especially HIV/AIDS and malaria**
7. Ensure environmental sustainability
8. Create a global partnership for development, with targets for aid, trade and debt relief



Goal 4: Reduce child mortality

- Survival prospects have improved in every region,
- 10.5 million children died before their fifth birthday in 2004 – mostly from preventable causes.
- The vast majority of these children (94 per cent) lived in 60 countries.
- Sub-Saharan Africa, with only 20 per cent of the world's young children, accounted for half of the total deaths.

Under-five mortality rate per 1,000 live births, 1990 and 2004



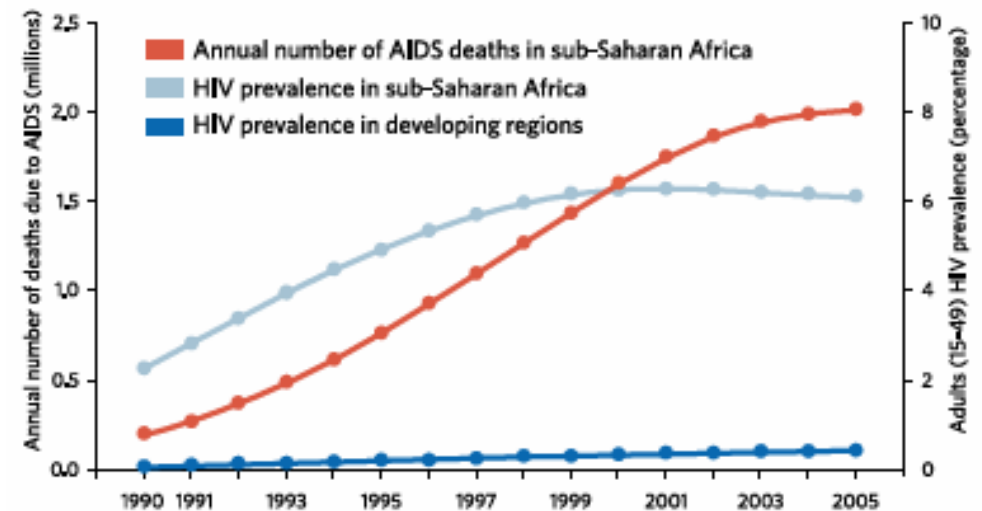
The Millennium Development Goals Report
2006



Goal 6: Combat HIV/AIDS, malaria & other diseases

- The epidemic remains centered in sub-Saharan Africa.
- With just over 10 per cent of the world's people, the region is home to 64 per cent of HIV-positive people and to 90 per cent of children (under 15) living with the virus.
- Twelve million sub-Saharan African children are orphans.
- Around 59 per cent of HIV-positive adults in sub-Saharan Africa – a total of 13.2 million people are women.

HIV prevalence in adults aged 15-49 in sub-Saharan Africa and all developing regions (Percentage) and number of AIDS deaths in sub-Saharan Africa (Millions), 1990-2005



The Millennium Development Goals Report
2006



Plan for scaling up HIV/AIDS treatment

WHO is moving urgently towards achieving the target: to deliver antiretroviral therapy (ART) to 3 million people with HIV/AIDS living in developing countries before the end of 2005.

For this purpose WHO devised a five pillar strategy (only strategy item 2 listed)

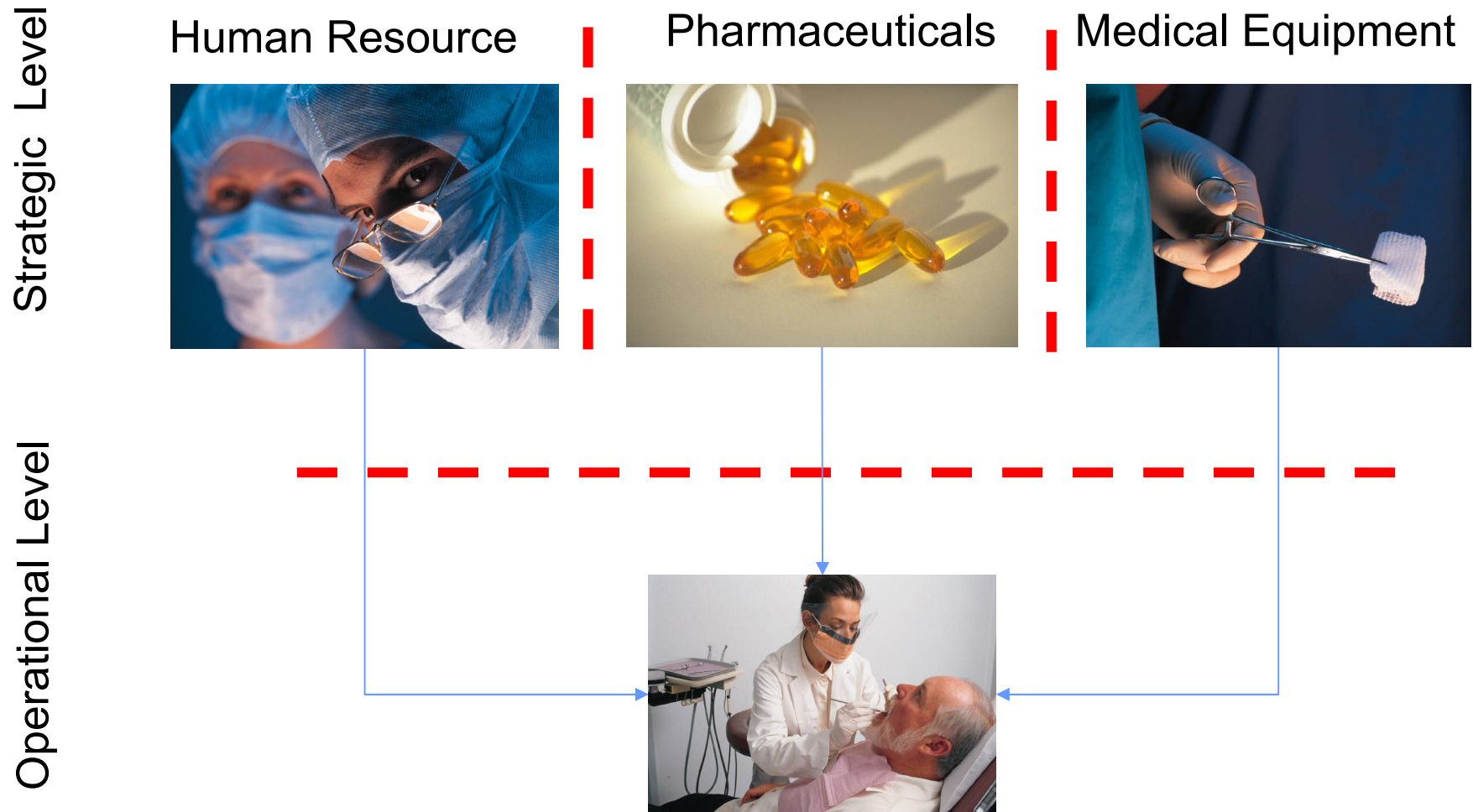
Provide Urgent, Sustained Country Support

- Start the emergency expansion of Training with a goal to train 100 000 professional and lay staff.
- Strengthen Physical Resources like laboratories and testing equipment.

The Reality ...



Typical Healthcare Delivery Scenario



Problem scope

- WHO estimated that in most developing countries in the early 1990's half of the inventory, in some cases as much as 75-80 percent, lay idle at any given time.
- The probable level of non-functional medical equipment in developing countries under various assumptions ranges from 10% to 60%.
- The WHO estimated that the asset value of equipment in 2002 was approximately USD709 billion, with a developing country share of USD85 billion.
- Under-utilized assets (at 15%) represent approximately 22% of total health care spending in the WHO African Region.



Summary

- Within WHO technical programmes health needs and priorities (often) are known, but rarely linked to resource planning;
- Programme and implementation strategies have often been developed without looking at long-term resource planning implications;
- Resource are planned and implemented vertically;
- Implementation, training, monitoring and evaluation often done in isolation;
- The strategic and operational divide is evident;

Healthcare technology is a major strategic factor in determining a community perception of the health system



What is iHTP ...



What is iHTP

- iHTP is a planning methodology and software-based tool that provides guidance on an adequate mix of resource inputs, comprising human resources, medical devices, pharmaceuticals and facilities, needed to deliver a defined set of health interventions.
- iHTP integrates healthcare needs, disease profiles, patient demographics, clinical practice, human resource and technology requirements, availability and constraints, associated capital and recurrent costs, and system's technology management capacity into one single tool.



Important Reminder

- Focus is on resource planning and costing and not on the prescription or adherence of clinical practice and guidelines



Guiding Principles

If you cannot measure something,
you cannot manage it.

If you cannot manage it,
you cannot improve it !



Challenges...



Challenges

- Providing health care effectively and efficiently involves putting together a great variety of resource inputs to produce an extraordinary array of different service outputs.
- The proper match between the supply of inputs and health system requirements, the right mix among the many different categories of inputs, the balance between capital investments and recurrent costs, and system's capacity to manage purchased inputs throughout their entire life cycle are vital for the effective delivery of health services and satisfactory performance of the health system.



iHTP Objective

- These challenges are comprehensively addressed by the Integrated Healthcare Technology Package (IHTP) allowing for informed decisions on systematic, logical, and thus strengthens optimal and rational planning, acquisition, deployment, utilization and management of healthcare technology resource inputs.



Secondary objectives (thematic)

- Strengthened HCT resource planning knowledge and capacity for various levels of care.
- Improved capacity and sustainability in target countries to plan their own healthcare technology resources.
- Thematic strengthening of resource planning, impact of recurrent, systemic and programmatic costs associated with technical assistance (bilateral and multilateral) at country level.
- Harmonization of HCT activities (including standards, nomenclature etc.).
- Increased awareness of health care management and its impact on health care service delivery.



Areas of Application ...



Gaps analysis and planning

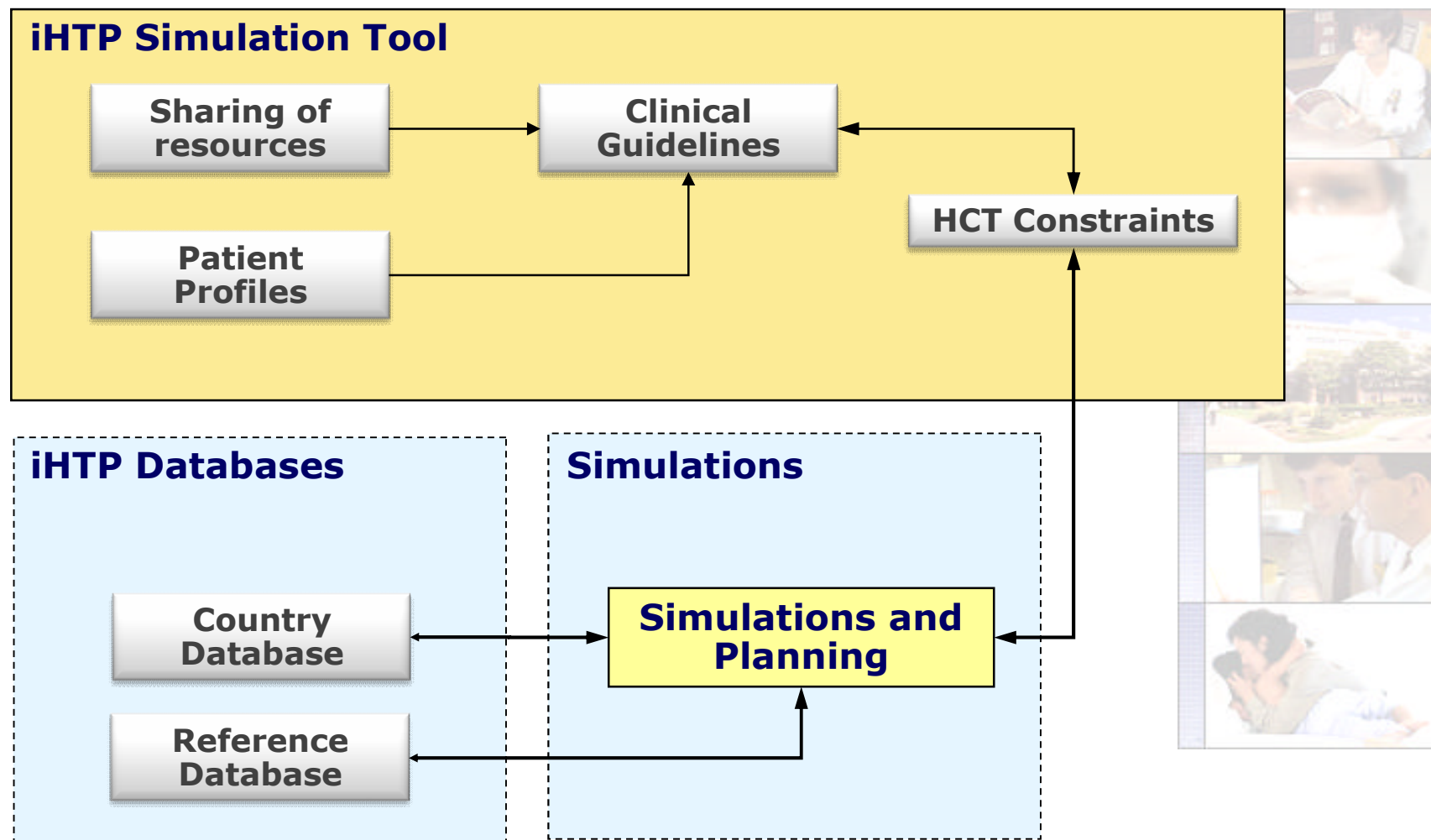
- **Gaps analysis is a disciplined, creative process for determining how to take your organization from where it is today to where you wish it to be in the future.**



The system ...



System Overview



System architecture

- Focus on having a central repository for commonly used data such as medical equipment terminology, pharmaceutical lists and clinical procedures.
- Substantial effort in order to eliminate the need for each user to create a custom database, reducing duplication of effort and increasing the accuracy of the data everyone uses.



System elements...



Medical Equipment

- Comprehensive medical equipment database (UMDNS based);
- Technology, maintenance and costing data;
- usability and technical criticality indicators;
- Separated scenario and reference database for improved country implementation

The screenshot displays the UMDNS database interface. On the left, a table titled 'S00010 - Patient History - (WHO)' lists various medical equipment items. An orange circle highlights the 'Pen, {Not Specified}' entry. On the right, a detailed view of a 'Dip Stick' is shown, including its code (85003), nomenclature, quantity (1), duration (1 - 2 min.), and usability status (Disposable).

Nomenclature	Quantity	Min. Time	Max. Time	Device Class	Device Group	Usability
Blankets, {Not Specified}	1	10	10	Blankets	Linen	Reusable
Board, Clip, Writing	1	5	5		Equipment Spec...	Reusable
Chairs, Office	2	10	10		Furniture Medical	Reusable
Desk, {Not Specified}	1	5	5	Desks	Furniture General	Reusable
Footstools, Two/Three-Step, {Not...	1	1	1	Footstools	Furniture Medical	Reusable
Paper, Recording, Patient History ...	1	{Disposable}	{Disposable}	Paper, Recording	Consumables	Disposable
Pen, {Not Specified}	1	{Disposable}	{Disposable}	Administration		Disposable
Pillows, {Not Specified}	1	10	10	Pillows	Linen	Reusable
Pillows, Clip	1	10	10	Pillows	Linen	Reusable
Sheets, Examination Table, Dispo...	1	{Disposable}	{Disposable}	Sheets	Consumables	Disposable
Sheets, Examination Table, Reusa...	1	10	10	Sheets	Linen	Reusable
Stools, Adjustable, {Not Specified}	1	5	5	Stools, Adjustable	Furniture Medical	Reusable
Tables, Examination/Treatment, {...	1	10	10	Tables, Examin...	Furniture Medical	Reusable

Dip Stick Details:

- Code: 85003
- Nomenclature: Dip Stick
- Quantity: 1
- Duration: 1 - 2 min.
- Usability: ☒ Disposable
- Status: ☒ Critical

Pharmaceuticals

- Comprehensive pharmaceutical database;
- Based on WHO pharmaceutical database
- Scheduling and drug interaction capability;
- Country specific costs can be linked to any pharmaceutical

Pharmaceutical

Oxytocin [1 Buffered chewable dispersible tablet, 10IU IV]

Details | Technology Details | **Schedule** | Costs

Is Scheduled? ☒

Quantity: 1 Buffered chewable dispersible

Strength: 10 IU

Frequency: 1

Times Every: Day

For: 1 Day

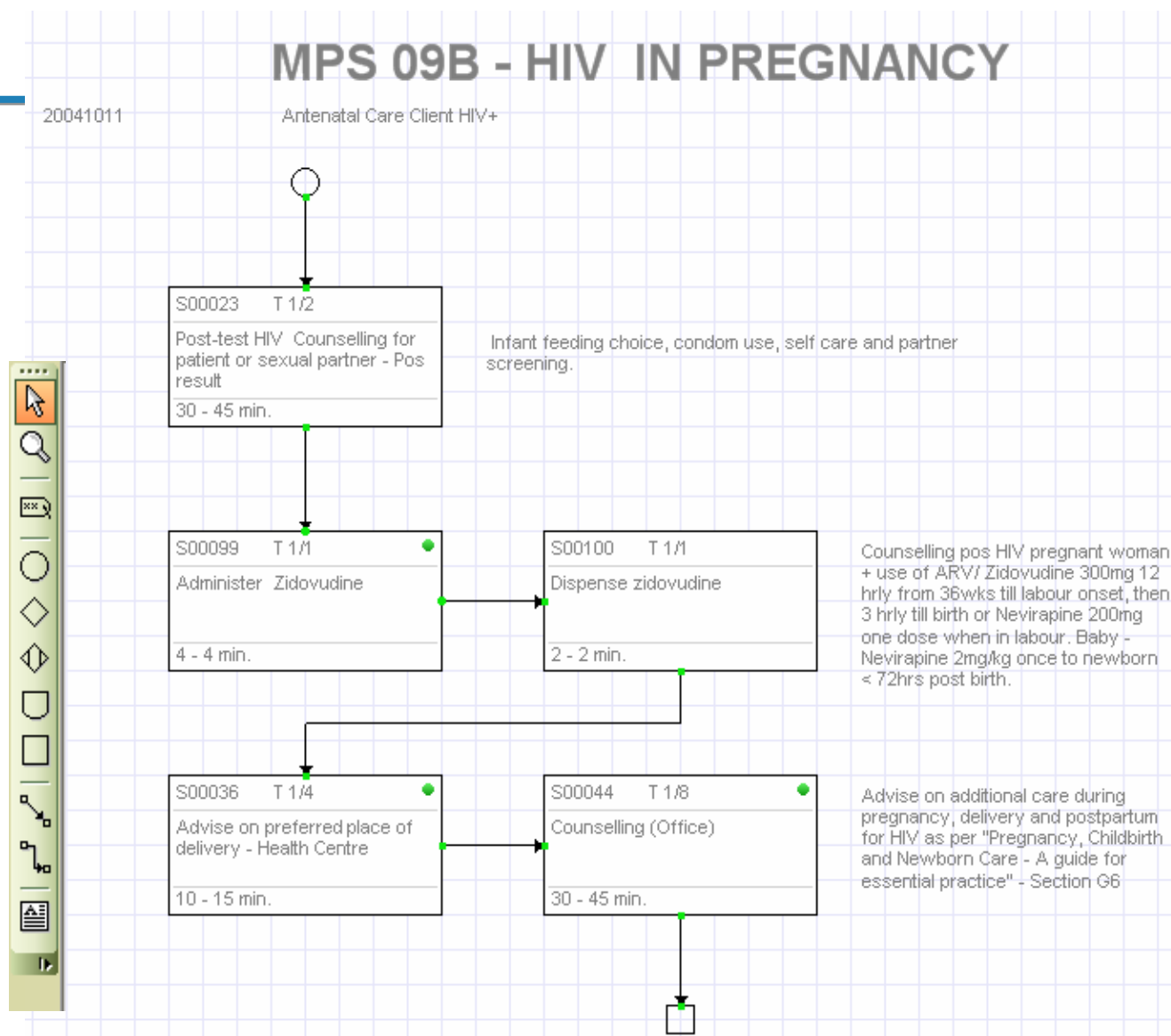
500056 - Administer Oxytocin Intravenously in labour [240 - 360 min.]

Human Resources | Medical Devices | **Pharmaceuticals** | Facilities | Technology Groups

Item Name	Quantity	ATC Code	Daily Defined Dose	Status	Sched...	Form	Strength	S..	Frequ...	Frequency Type
Oxytocin	1	H01B R02	0	Critical	1	Buffered chawa...	10	IU	1	Day
Ringer's lactate	2		0	Critical	1	Buffered chawa...	1	L	2	Day

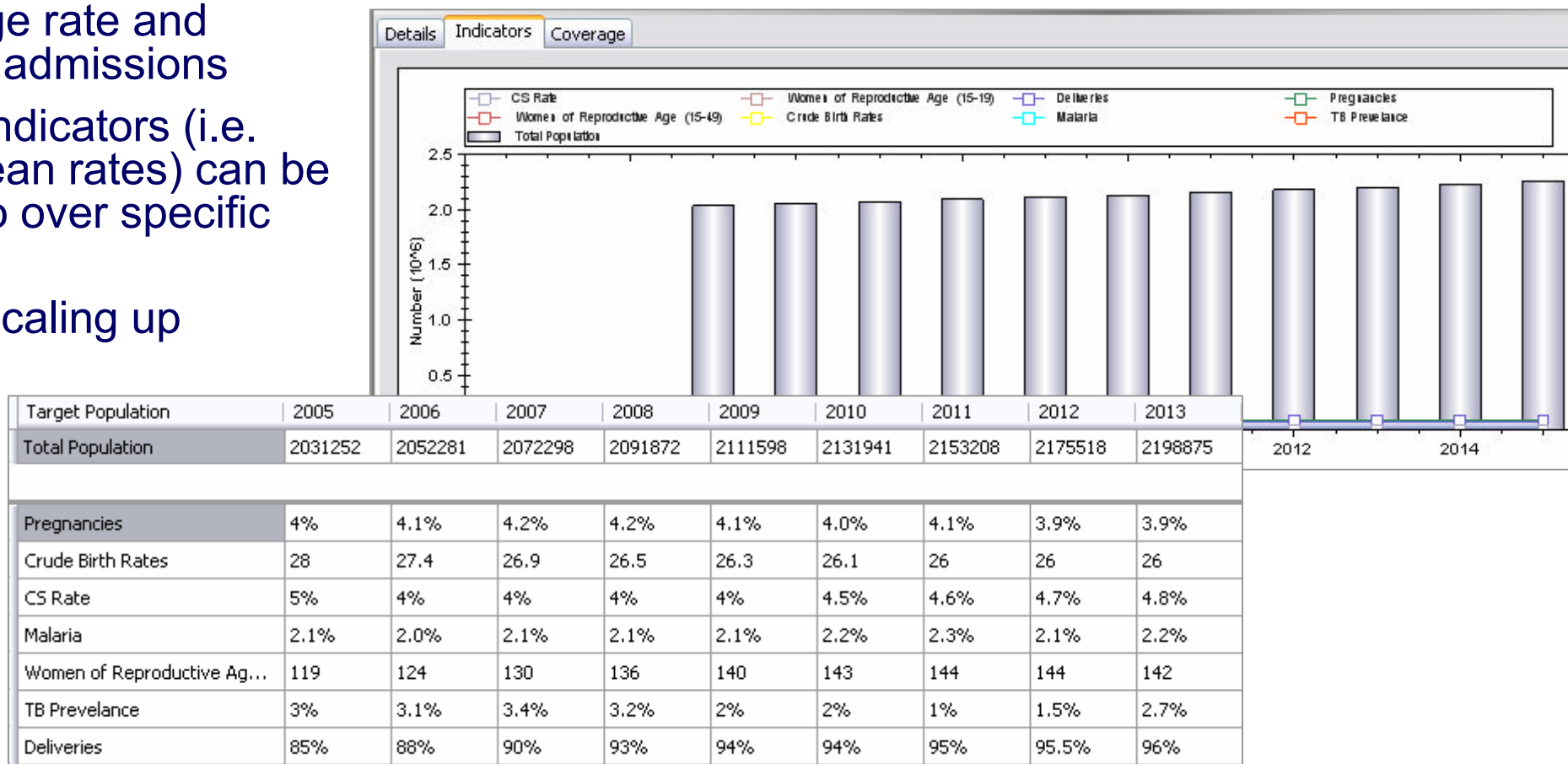
Clinical guidelines

- iHTP reference database contains 4500 pre-linked procedurals
- 250 clinical guidelines (iHTP terminology: scenarios) have been completed and are available on the web;
- Scenarios can be adapted to any country situation;



Epidemiological profiles

- Population indicators
- Coverage rate and hospital admissions
- Target indicators (i.e. Caesarean rates) can be model to over specific years;
- Allows scaling up



Health package modelling

Health Package

Name: WHO HP with constraints
Country: WHO
Creation date: 15/01/2007

Calculation period: 2007 to 2007 **Average**

Details | Scenario | Epidemiological Profile | Constraint

Calculate

Medical Officer

General | Availability

Working days
 Working days per week: 5
 Working days per month: 22
 Leave days per year: 15
 Sick days per year: 15

Effectivity rate
☒ Available
 Clinical: 70% Primary
 Administration: 16% On
 Other: 14% On

Scenario Name	Level of Care	% At Level (Seeking Care)	Epidemiological Profile	Target Indicator	Indicator No.	Coverage Indicator	Coverage Rate	Total Req. Intervention	Technology Constraint
<input checked="" type="checkbox"/> MPS.08.b - Malaria in Pregnancy - Hospital	District	60	Typical District	Malaria	15,575	Malaria	77	7,195.7	WHO Constraint
<input checked="" type="checkbox"/> MPS.17.a - Eclampsia - Health Centre	Clinic	80	Typical District	Deliveries	5,107	Malaria	77	3,145.9	WHO Constraint
<input checked="" type="checkbox"/> MPS.08.a - Malaria in Pregnancy - Health Centre	Clinic	80	Typical District	Malaria	15,575	Antenatal Care	67.5	8,410.5	WHO Constraint

Position	Salary/yr (Min)	Salary/yr (Max)	Min. Quantity Required	Status	Training/yr (Max)	Recurrent Cost (Max)
Midwife (Enrolled)	2,800.00	3,867.00	1.00		290.03	4,157.03
Laboratory Assistant	1,959.00	2,867.00	1.00		86.01	2,953.01
Nurse, Enrolled	2,876.00	4,394.00	1.00		128.35	4,522.35
Nurse, Professional	3,800.00	4,210.00	1.00		234.00	4,444.00
Medical Officer	4,667.00	4,988.00	1.00		235.00	5,223.00
Nurse, Midwife	3,345.00	3,658.50	1.00	Critical	164.63	3,823.13
Nurse, Assistant	2,755.87	2,755.87	1.00	Critical	100.00	2,855.87

System outputs...



Reports - Static

- Static healthcare technology reports (for pharmaceuticals; medical equipment; human resources and facilities);
- Can be used for static equipment lists i.e. pedicure equipment procurement; technology scope evaluation;
- Does not indicate quantity

Nomenclature	Device Class	Device Group	Usability	Status
Pen, {Not Specified}		Administration	Disposable	Critical
Forms, Medical and Patient, {Not Specified}	Forms, Medical an...	Administration	Disposable	Critical
Gloves, {Not Specified}	Gloves	Administration	Disposable	
Folder, Patient		Administration	Disposable	Critical
Charts, Bed, {Not Specified}	Charts	Administration	Reusable	
Paper, Recording, {Not Specified}	Paper, Recording	Consumables	Disposable	
Cotton Balls, Wool, Sterile	Cotton Balls	Consumables	Disposable	
Paper, {Not Specified}	Paper	Consumables	Disposable	
Paper, Recording, Home Based Maternal Card	Paper, Recording	Consumables	Disposable	
Cotton Balls, wool	Cotton Balls	Consumables	Disposable	
Needles, Disposable	Needles	Consumables	Disposable	
Paper, Recording, Patient Assesement - N/A	Paper, Recording	Consumables	Disposable	Critical
Needles, {Not Specified}	Needles	Consumables	Disposable	
Lancets, Blood, {Not Specified}	Lancets, Blood	Consumables	Disposable	
Adhesive Strips, {Not Specified}	Adhesive Strips	Consumables	Disposable	
Swabs, {Not Specified}	Swabs	Consumables	Disposable	
Cotton Balls, {Not Specified}	Cotton Balls	Consumables	Disposable	
Paper, Recording, Patient History - N/A	Paper, Recording	Consumables	Disposable	Critical
Paper, Recording, Procedure - N/A	Paper, Recording	Consumables	Disposable	

Reports - Dynamic

- Dynamic healthcare technology reports includes quantities – calculation is based on workload and schedule;
- Provides operational costs; dynamic quantities; recurrent and opportunity cost
- Takes into consideration healthcare technology availability;
- Reports provided “drill down technology” – ideal in evaluating cost drivers

Scenario	Number of Cases	Medical Devices	Pharmaceuticals	Facilities	Human Resources	Total	Average Cost
MPS.08.a - Malaria in Pregnancy - Health Centre	304.51	R2,536.00	R1,047.52	R28.55	R1,316.10	R4,928.17	R16.18
MPS.08.b - Malaria in Pregnancy - Hospital	260.01	R5,760.20	R1,065.65	R24.07	R50.07	R6,899.99	R26.54



Drill-down Capability

Scenario	Number of Cases	Medical Devices	Pharmaceuticals	Facilities	Human Resources	Total	Average Cost
MPS.08.a - Malaria in Pregnancy - Health Centre	304.51	R2,536.00	R1,047.52	R28.55	R1,316.10	R4,928.17	R16.18
MPS.08.b - Malaria in Pregnancy - Hospital	260.01	R5,760.20	R1,065.65	R24.07	R50.07	R6,899.99	R26.54

Position	Patient Load	Work Load	Min. Quantity Required	Salary/yr (Max)	Training/yr (Max)	Recurrent Cost (Max)	Operating Cost (Max.)	Average Cost (Max.)
Laboratory Assistant	243.6	2,436	0.03	R1,430.00	R3.00	R1,433.00	R35.93	R0.12
Nurse, Staff	243.6	487	<0.01	R4,210.00	R4.00	R4,214.00	R17.45	R0.06
Nurse, Midwife	48.7	487	<0.01	R26,816.81	R1,206.76	R28,023.56	R202.65	R0.67
Midwife (Enrolled)	243.6	3,654	0.05	R28,345.11	R2,125.88	R30,470.99	R1,551.57	R5.10

Linked Technique	Patient Load	Work Load	Min. Quantity Required	Salary/yr (Min)	Salary/yr (Max)	Training/yr (Max)	Recurrent Cost (Max)	Average Cost (Max.)
86750: Malaria - With Blood Taking Devices	243.6	2,436	0.03	R1,200.00	R1,430.00	R3.00	R1,433.00	R0.12

Laboratory Assistant

Medical

Details | Schedule | **Costs**

<??> X

Cost Code	Description	Currency	Min. Cost	Max. ...
HR-TRAIN	Training/yr	Rand (ZAR)	2	3
CC0004	Salary/yr	Rand (ZAR)	1200	1430

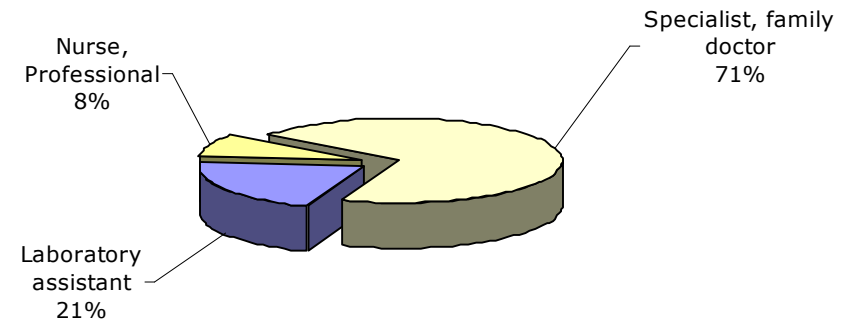
Country examples...



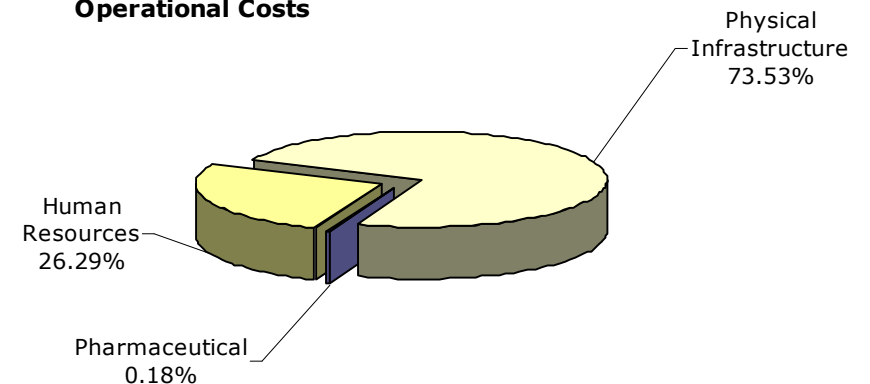
Country Implementation

- Mapping of Mother and Child health package;
- Approximately 30 guidelines – based on observations and recommended clinical practice;
- Primary and secondary level of care;
- Resource requirements, including operational and recurrent costs;

Operational Costs per Year (HR)



**Primary Level: Maternal Services (Ukraine)
Operational Costs**



Ukraine - Overview

- Identification of cost drivers
- Minimum quantities of resources
- Critical path identification
- Optimization through evidence

FURNITURE GENERAL	Group	Type	Simulated Qty	Total Required	Unit Cost (min)	Unit Cost (max)	OPER COST	FIXED REPLACE COST
Bench, {Not Specified}	Furniture General	Reusable	0.7	1.0	300.00	394.00	260.71	394.00
Desk, {Not Specified}	Furniture General	Reusable	2.8	3.0	300.00	320.00	895.37	960.00
Racks, Test Tube, {Not Specified}	Furniture General	Reusable	0.9	1.0	30.00	35.00	30.66	35.00
Cabinets, Laboratory, {Not Specified}	Furniture Medical	Reusable	0.3	1.0	140.00	160.00	47.05	160.00
Chairs, Office	Furniture Medical	Reusable	4.9	5.0	70.00	90.00	443.97	450.00
Footstools, Two/Three-Step, {Not Specified}	Furniture Medical	Reusable	0.1	1.0	80.00	120.00	10.79	120.00
Tables, Examination/Treatment, Adjustable, Obstetrical, {Not	Furniture Medical	Reusable	0.1	1.0	5,400.00	12,000.00	1,089.86	12,000.00
Tables, Instrument, {Not Specified}	Furniture Medical	Reusable	0.1	1.0	500.00	600.00	55.59	600.00
8			9.8	14.0			2,834.02	14,719.00

Ukraine, UAH

Development vision...



Vision

- Expansion of costing capabilities, including systemic and programmatic costs (Sept 07).
- Expansion of the “scenario” base – focus on evidence based guidelines.
- Monitoring and Evaluation.
- Network of users to include; “developed countries” and organizations
- Sustainability



Possible Collaboration...



WHO's strategic directions

- Generation and dissemination of **evidence-based norms and standards** for prevention, treatment, care, support, and their application to promote healthy lifestyles and reduce risk factors
- **Advocacy and technical support** for the building of normative, technical and managerial capacity in countries for the implementation of effective interventions that result in equitable and sustainable health systems
- Strengthening **partnerships** and building consensus for the development, implementation, monitoring and evaluation national policies and strategies that foster an enabling policy and institutional environment.



Thank you

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