

Mobile Phones: The Unexpected Health Care Tool in Emerging Economies

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Can you guess?

How many of you have mobile phones?

How many of you use facebook on your phones?

How many mobile phones in the world?

What percentage of mobile phones are in developing countries?

How many mobile phones in the US?

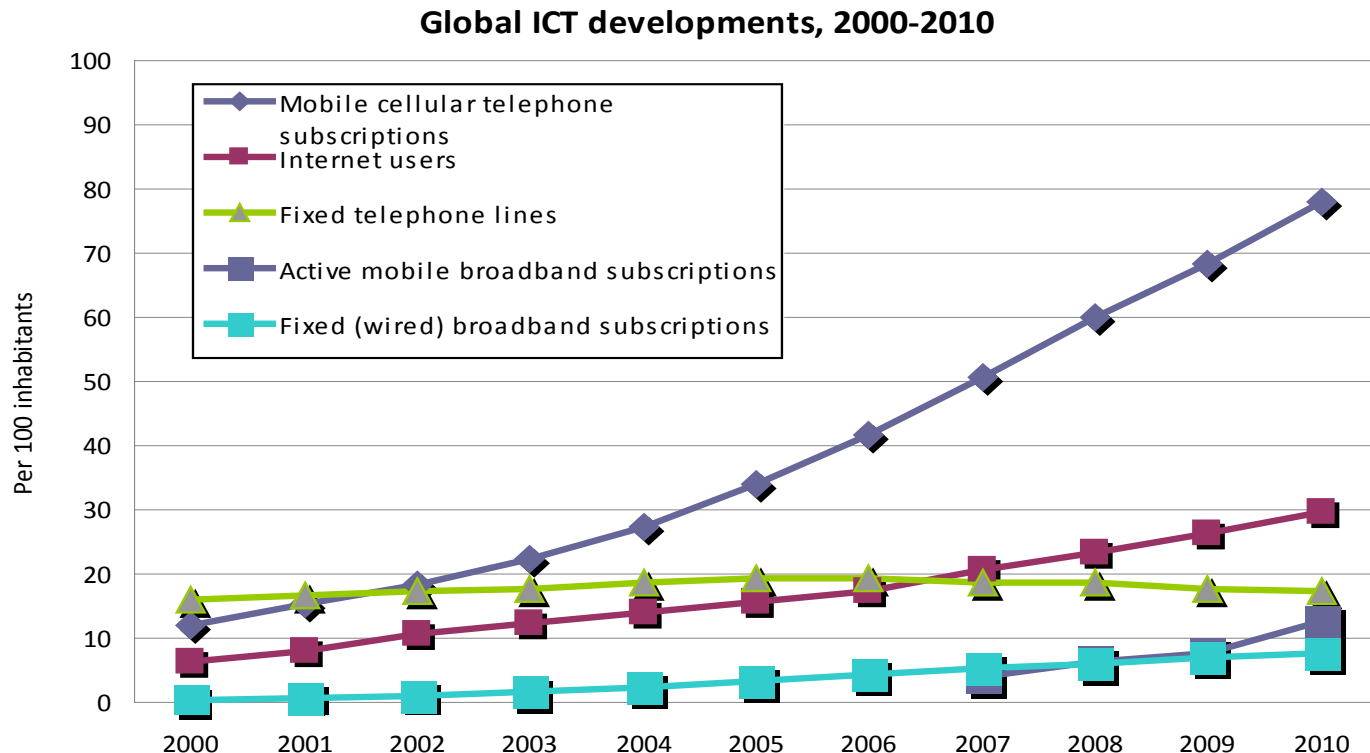
What percentage of the Americans have access to the internet?

What is the largest facebook market? What is the second?

What is the largest mobile facebook?

Global ICT Developments

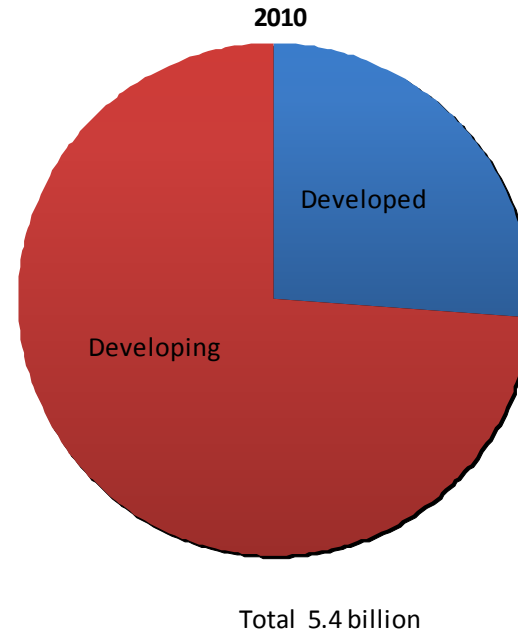
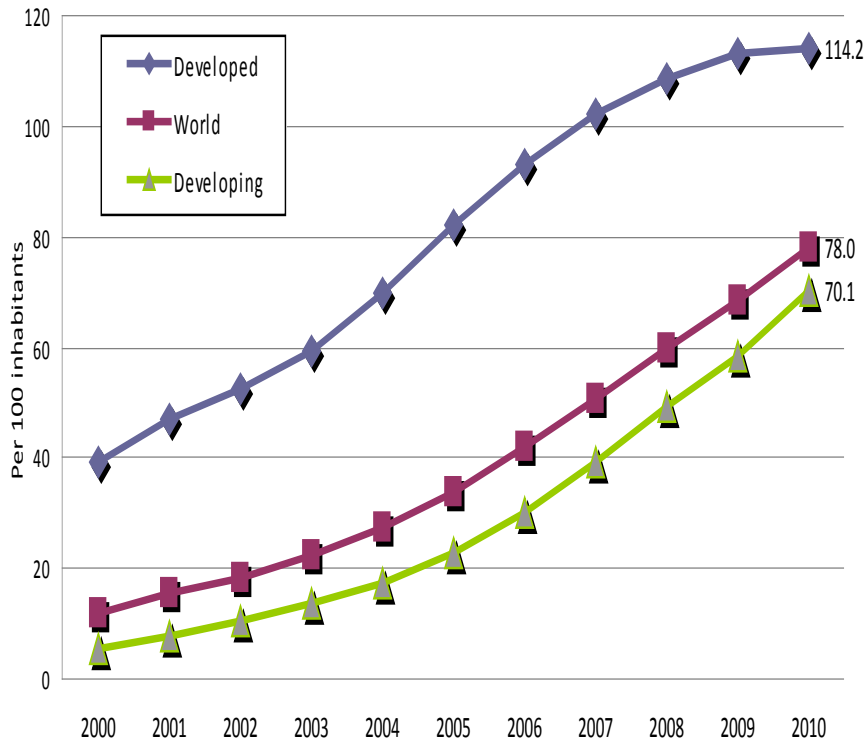
-The high percentage of mobile phone users in comparison to other technologies provides a **platform for increasing health care services** for people worldwide



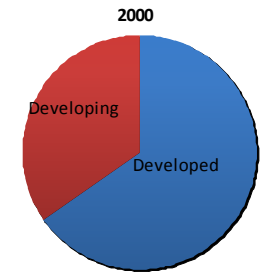
Source: ITU World Telecommunication /ICT Indicators database

Mobile Penetration Trend: Developing Countries VS Developed Countries

Mobile cellular subscriptions per 100 inhabitants, 2000-2010



Total 5.4 billion



Total 719 million

The developed/developing country classifications are based on the UN M49, see:
<http://www.itu.int/ITU-D/ict/definitions/regions/index.html>
 Source: ITU World Telecommunication/ICT Indicators database

<http://www.itu.int/ITU-D/ict/definitions/regions/index.html>

Source: ITU World Telecommunication /ICT Indicators database

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Increasing Mobile Penetration in Emerging Market

64% of all mobile phone users are in the **developing world**

-Africa: There were 330 million mobile subscriptions in African countries by the end of June 2010 representing an increase of 45% year-on-year, a rate that has made the continent the world's single fastest-growing regional mobile market

-India: Mobile penetration reached 44.7 per hundred inhabitants in 2009 increasing from 4.69 in 2004 for a growth rate of 57.0% per year over the 5 year period

-China: From 1998-2009 China's mobile penetration increased from 1.92 per hundred to 55.9 per hundred

Increasing Mobile Penetration in Emerging Market

More data in developing countries at a glance:

Country	2003	2008	Country	2003	2008
Algeria	4.54	92.72	Guinea-Bissau	0.09	31.75
Angola	2.24	37.59	Honduras	5.77	84.86
Azerbaijan	12.84	75	Kenya	4.71	42.06
Bangladesh	0.92	27.9	Kyrgyzstan	2.74	62.69
Belarus	11.32	83.98	Libya	2.23	76.71
Benin	3.21	41.85	Morocco	24.93	72.19
Bolivia	14.47	49.82	Namibia	11.36	49.39
Botswana	24.79	77.34	Nicaragua	8.76	54.84
Cambodia	3.69	29.1	Nigeria	2.34	41.66
Colombia	14.83	91.9	Pakistan	1.62	49.74
Congo	0.6	49.98	Peru	10.8	72.66
Cote d'Ivoire	6.94	50.74	Rwanda	1.5	13.61
Dominican Rep.	22.79	72.45	South Africa	36.81	90.2
Egypt	7.8	50.62	Sri Lanka	7.24	55.24
Gabon	22.8	89.77	Sudan	1.42	29
Ghana	3.8	49.55	Viet Nam	3.39	80.37

Source:

http://www.crei.cat/conferences/cornucopia/confpapers/JerryHausman_Barcelona%20paper.pdf

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Social Networking Trends

- ▶ Based on earlier trends shown, mobile broadband is cheaper and more accessible than fixed internet
- ▶ 45% of internet users are below the age of 25
- ▶ 500 million people use facebook daily (at least half via mobile).
- ▶ 400 million tweets per day
- ▶ Developing countries are the fastest growing markets for social networks like Facebook and Twitter

Sources: <http://www.thefiscaltimes.com/Articles/2011/09/12/The-Social-Media-Explosion-By-the-Numbers.aspx#page1>

<http://expandedramblings.com/index.php/resource-how-many-people-use-the-top-social-media/>

Mrs Iju Ofomata- Aderemi, One world



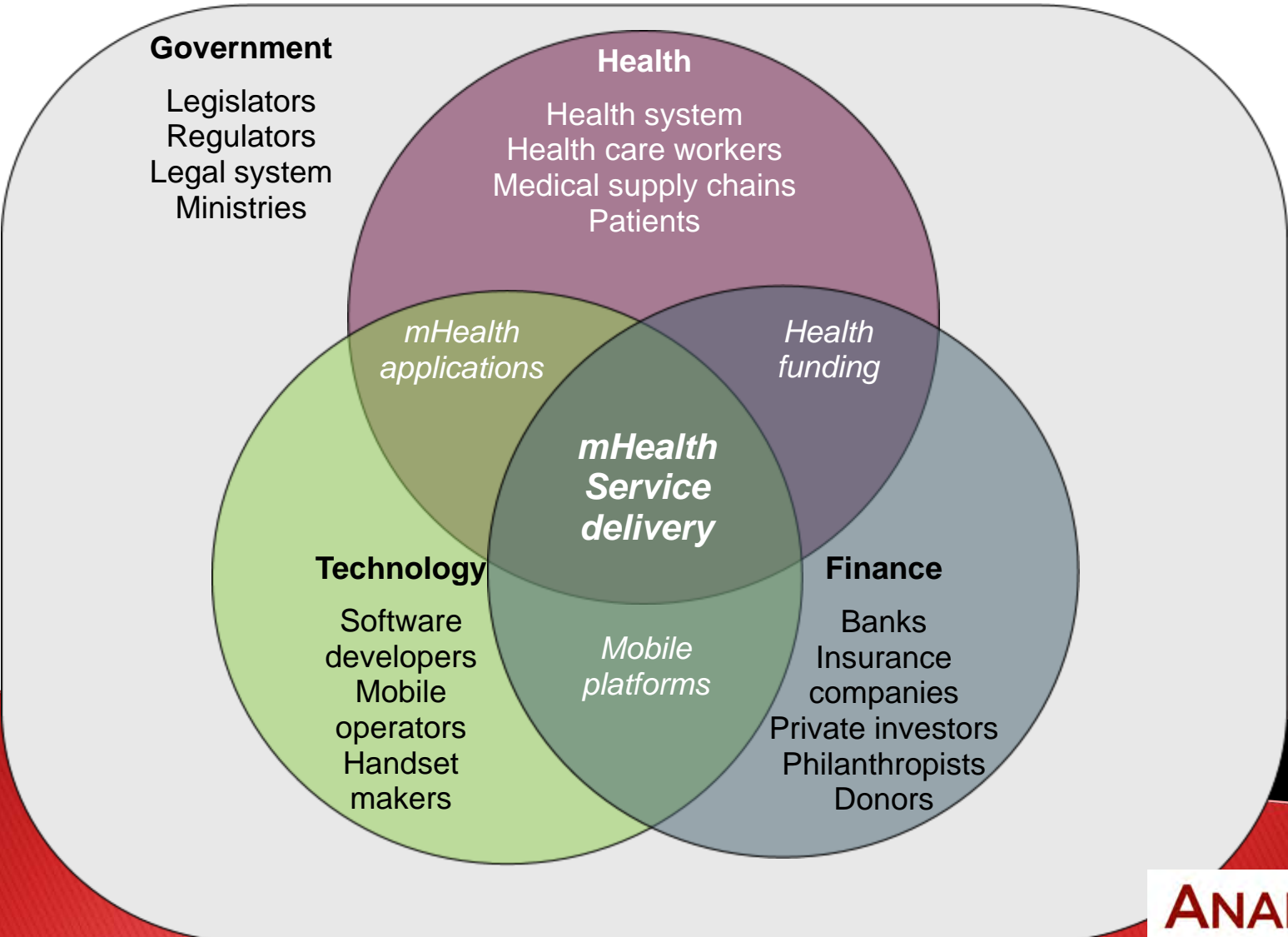
Selected country statistics

- ▶ Nigeria: Facebook – 4.2 million users; 3% of general population; 10% of the online population; **75% of users between 16 and 34 years** (35% 18–24, 35% 25–34, 5% aged 16–17); 69% male & 31% female.
- ▶ Morocco: Facebook – 4.34 million users; 14% of general population and 41.5% of the online population; **81% of users between 16 and 34 years** (43% 18–24, 24% 25–34, 14% 16–17) 61% male and 39% female.
- ▶ Egypt: Facebook – 10.6 million users; 13% of general population and 62% of the online population; **78% of users between 16 and 34 years** (40% aged 18–24, 27% aged 25–34, 11% aged 16–17); 65% male and 35% female.
- ▶ Twitter – played a role in the revolution, was blocked and unblocked, has a high profile.

In the week surrounding the one year anniversary of the revolution, #Jan25 was used in 193,000 tweets by 33,997 unique users.


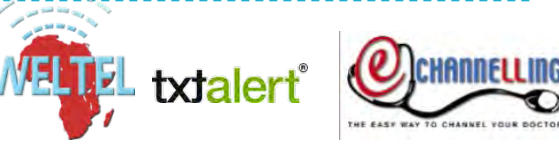



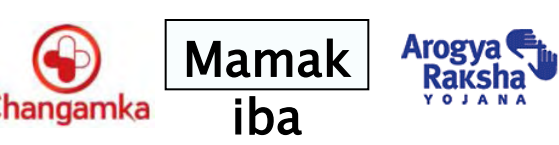

Source: <http://www.thefiscaltimes.com/Articles/2011/09/12/The-Social-Media-Explosion-By-the-Numbers.aspx#page1>

The mHealth ecosystem is created through the collision of three sectors – health, technology and finance – with the backdrop of government policy and regulation



Source: Dalberg research and analysis

The range of mhealth applications is diverse and addresses a variety of different issues

Health services	Description of mHealth applications	Examples
<p>1 Data Collection / Disease Surveillance</p>	<p>Usage of mobile handheld devices to collect data remotely (e.g., by community health workers); additionally, use of remote diagnostic tools for disease surveillance and treatment; includes civic participation in reporting outbreaks and disease information</p>	
<p>2 Treatment Adherence / Appointment Reminders</p>	<p>Utilization of messages and voice to communicate treatment and procedural reminders to patients (e.g., automated SMS reminders to patients on chronic medication)</p>	
<p>3 Emergency Medical Response Systems</p>	<p>Emergency response tools, including creation of EMR via mobile phones, and ambulance services whose reach is extended with mobile usage in remote areas</p>	
<p>4 Health Information Systems & Support Tools for Health Workers</p>	<p>Collection and analysis of patient data, particularly at clinics or related to call centers that are used to triage services and treatment; information to help health worker prioritization; information on inventory (<i>Note: overlaps with supply chain management</i>)</p>	
<p>5 Supply Chain Management</p>	<p>Management of inventory and supply chain steps by mobile tracking and communication; includes advocacy informed by supply chain information</p>	
<p>6 Health Financing</p>	<p>Use of smart-cards, vouchers, insurance and lending for health services linked to mobile platforms (e.g., m-Pesa) or otherwise enabled using mobile</p>	
<p>7 Disease Prevention and Health Promotion</p>	<p>Use of mobile and SMS-based health information and education to inform individual patients of preventive care and treatment</p>	

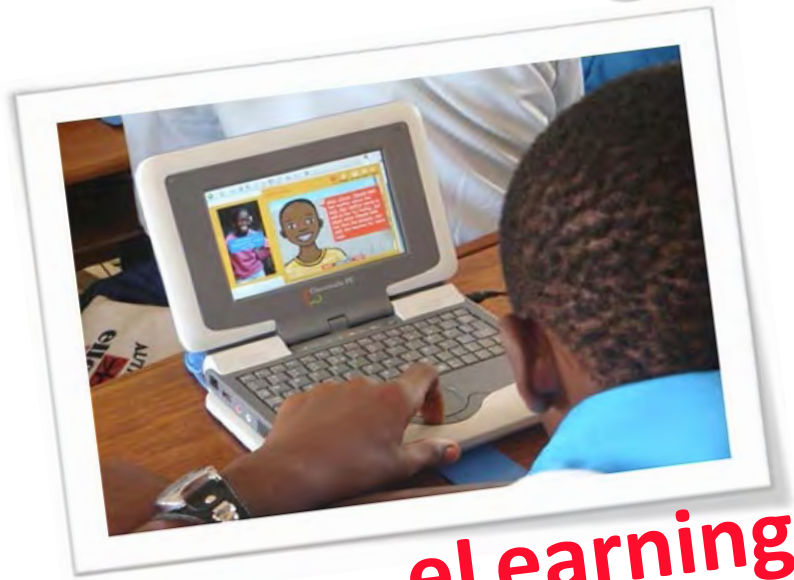
The ICT Advantage – One World

- ▶ Cultural taboos prevent young people from accessing SRH information through traditional methods



- ▶ ICT and mobiles provide a way to reach young people confidentially, cheaply and effectively, where they already congregate.
- ▶ They can share this info & it is getting cheaper

“Learning about Living”



eLearning



mobile

radio



Results

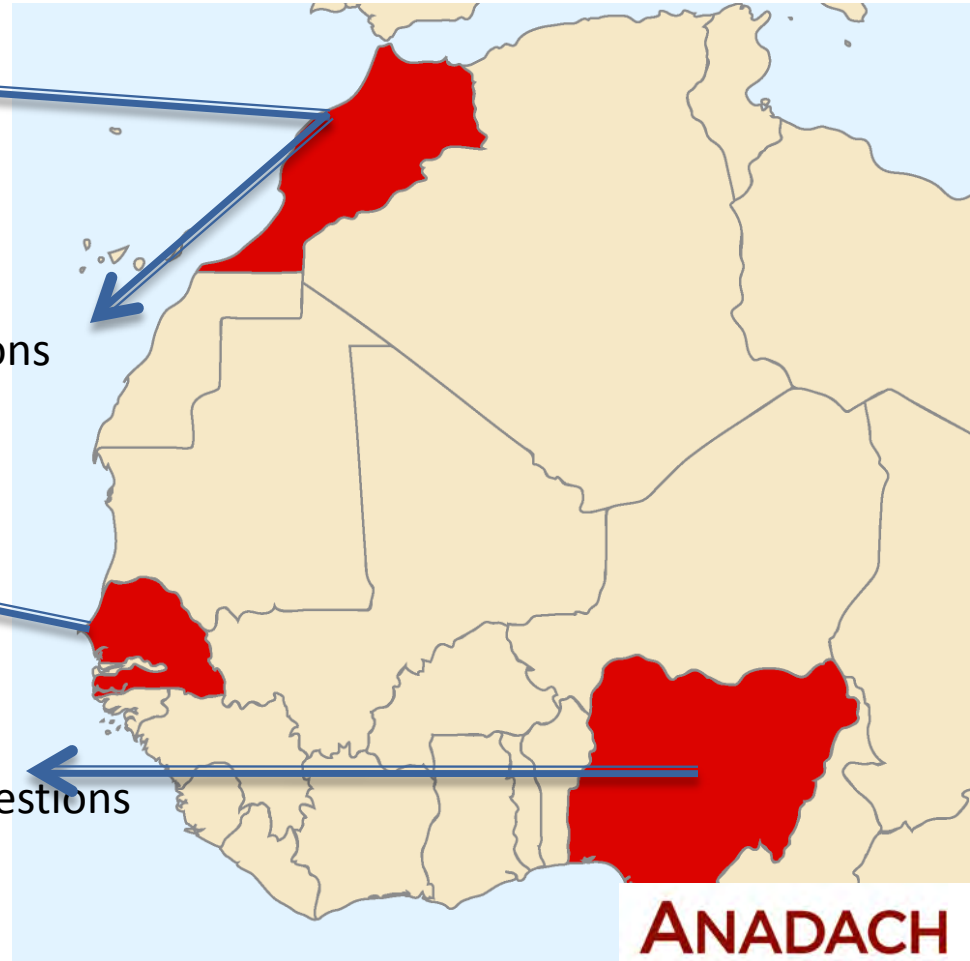
How many questions?

Morocco SMS
6 months
14,000 questions

Morocco Radio
1 year
>20,000 questions

Senegal
1 year
100,000 questions

Nigeria
4 years
400,000 questions



Results

What are they asking?

I have a friend who is HIVpositive,should I keep away from him because I might get infected.pls what should I do?

Is it normal 4 a guy 2 always av erection every morning wen he wakes up?

If I am aving sex what r d step I must take 2 avoid unwanted pregnancy?

*Where can I get tested?
Aks 21 years Female.*

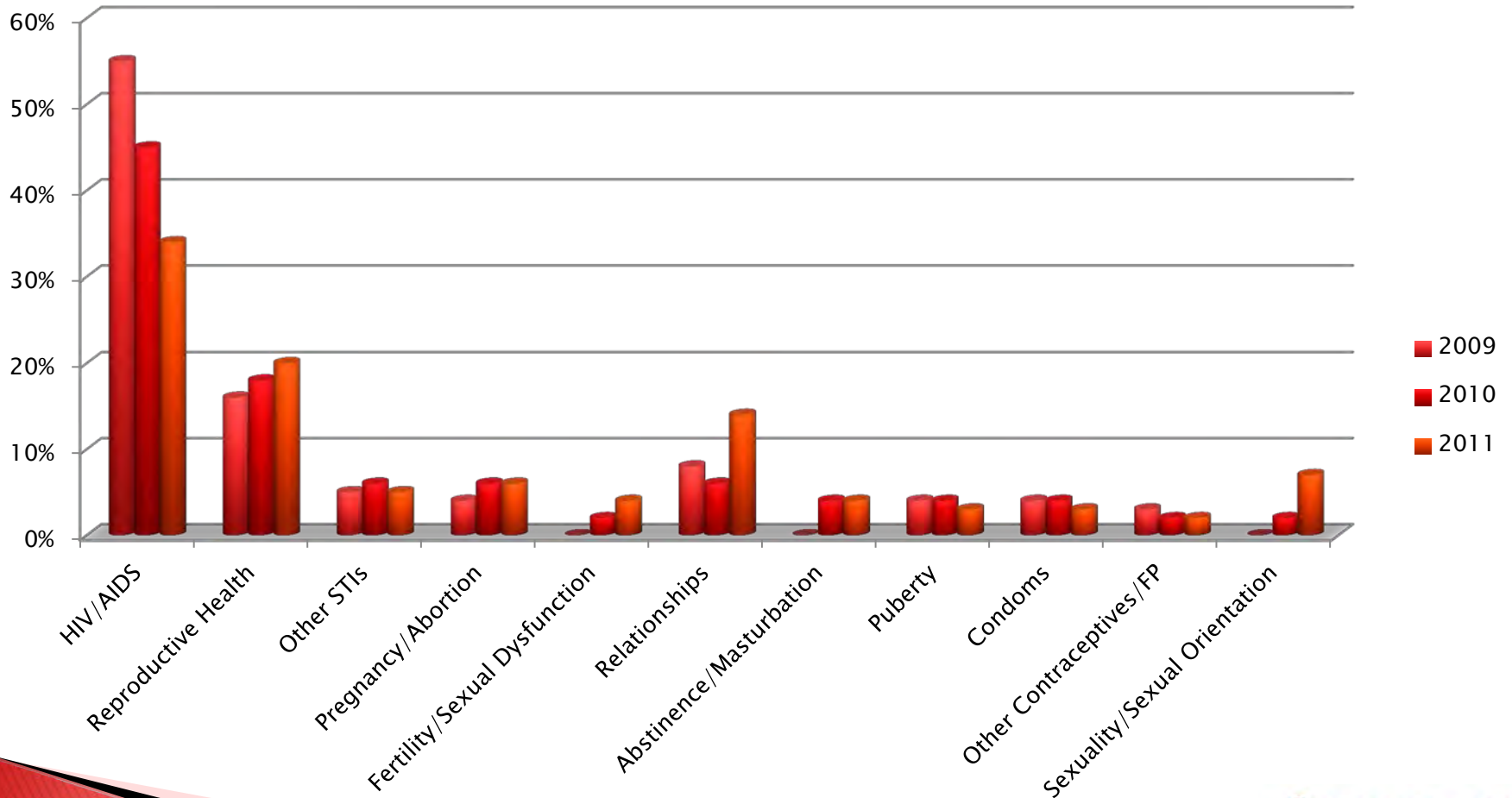
Male, 20 yrs. my gal does not allow me use condom when having sex with her. how should i get her to understand?

16 yrs, female. Is it gud for ur father 2 have sex wit u all in de name of tradition?

Is it possible for a girl 2 b pragnant at the same time seeing her period?

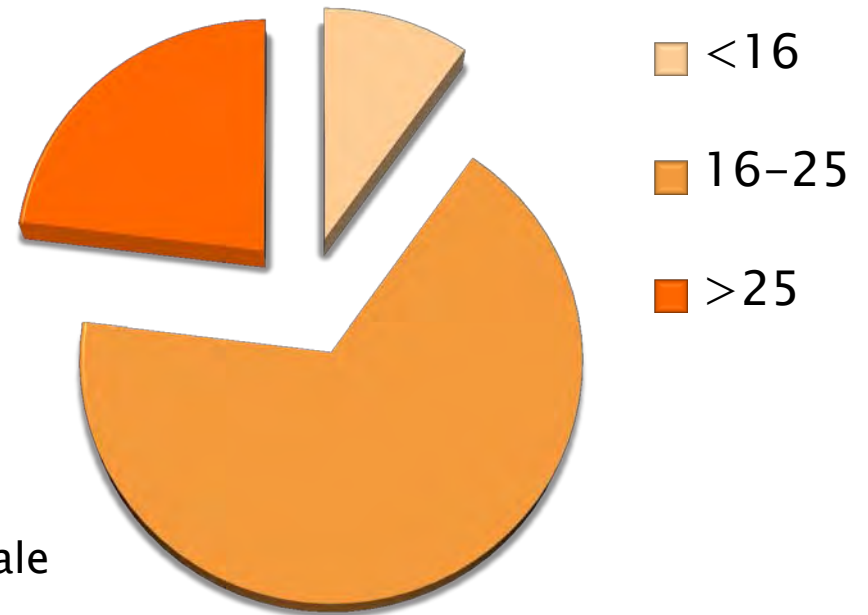
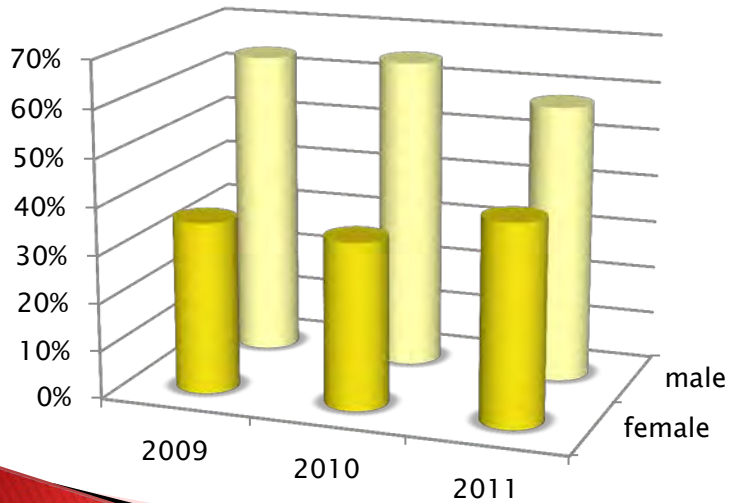
Results

What are they asking about?



Results

Who's asking?

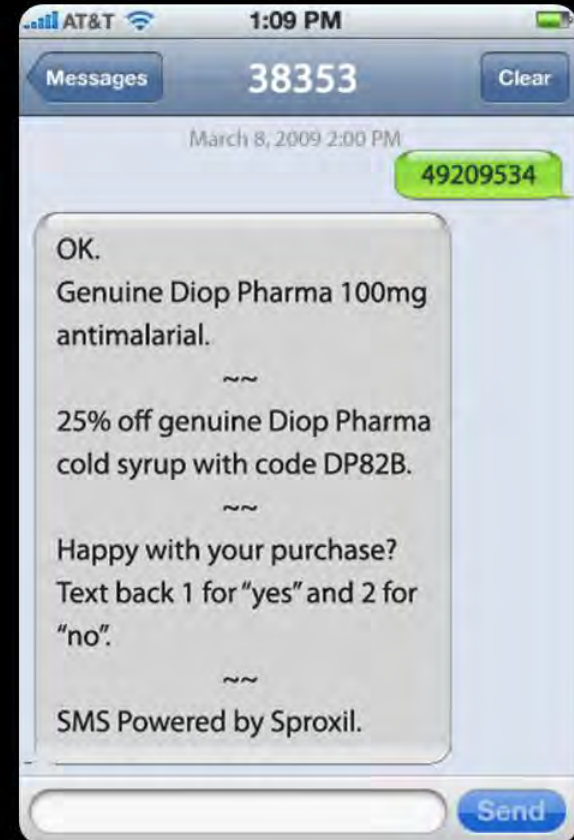


Questions received (2009-11)



Pharma companies lost **\$200B +** to counterfeiters last year and by 2015 the anti-counterfeiting technology market will be **\$82.2B**

We address this market with an advanced approach



Overview

SPROXIL.

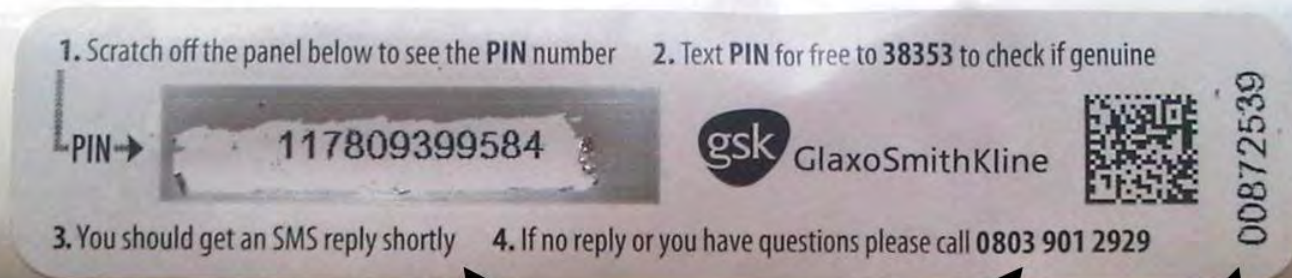
May 2011

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Consumer: Scratch and Text Codes to the Cloud

SPROXIL

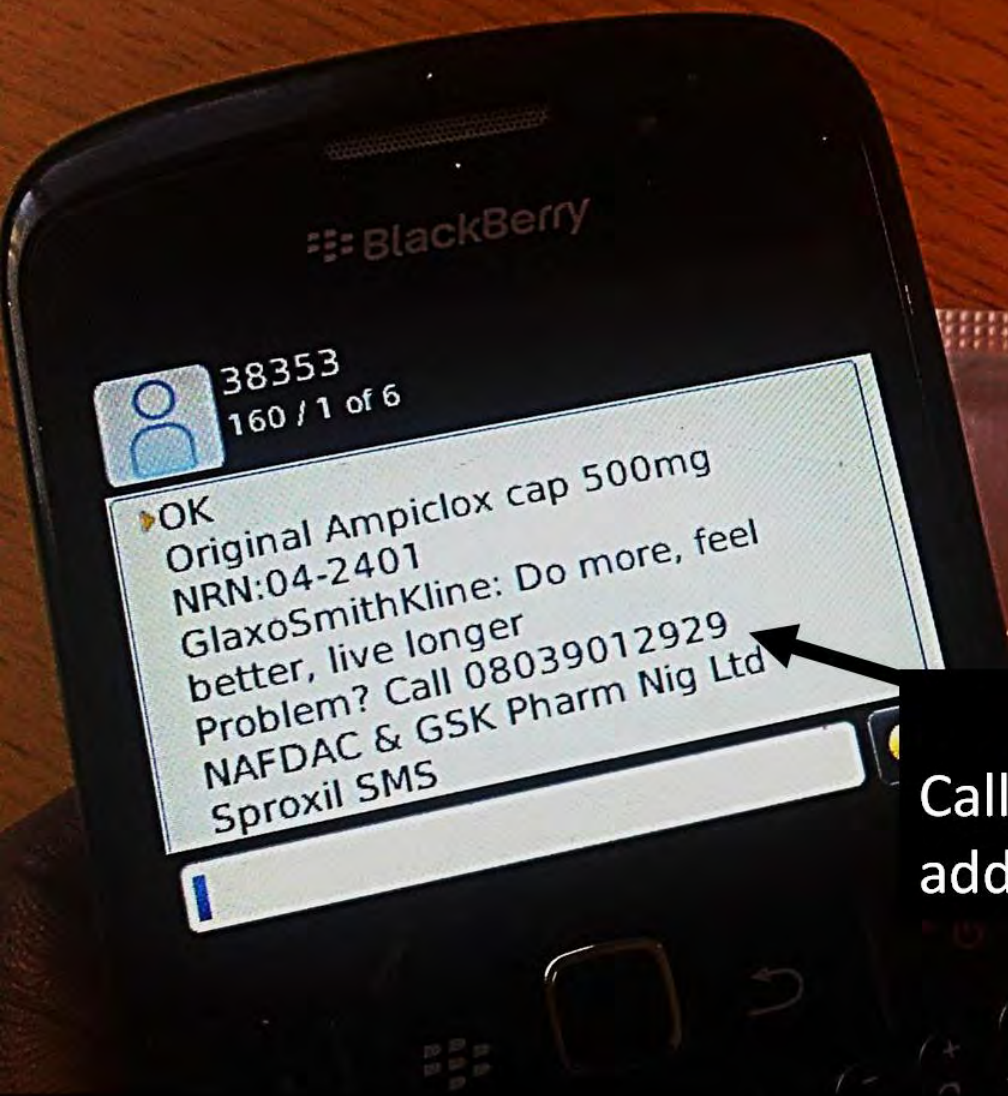


Multiple Options for Various Supply Chain Levels

1. Covert PIN code
2. Overt 2D barcode
 - Could contain covert taggants in ink
3. Overt serial number
 - Could be encoded, pseudo-random

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SMS + Voice
Call center number for additional assistance

Rapid text message response with “OK” or “FAKE”
Trust is assured between consumer and pharmacist
No special equipment or training needed. Works with bas

Sproxil has World-class Clients

A sample of our clients:

- **GlaxoSmithKline** Nigeria uses Sproxil MPA™ technology to protect Ampiclox™
- **Johnson & Johnson's** Janssen-Cilag (Nizoral® in Nigeria)
- Merck Serono's Glucophage® in Nigeria via **distributor** (BIOFEM)
 - Sproxil works with manufacturers and distributors alike

New GlaxoSmithKline Mobile Authentication Service (MAS)

How to confirm original Ampiclox™ caps 500mg



1 Scratch off panel to see PIN



2 Text PIN to:



38353

Wait for a reply shortly



OK
Original
Ampiclox cap 500mg
NRN: 04-2401
GlaxoSmithKline: do more,
feel better and live longer.
Problem? Call 08039012929
NAFDAC & GSK Pharm. Nig. Ltd
SMS by Sproxil

SMS IS FREE

HELPLINE: 08039012929

Technology by **SPROXIL**

Supported by **NAF**

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GlaxoSmithKline Pharmaceutical Nigeria Limited ©2011. 100000

Overview of Weltel (2/2)



Challenges across the ecosystem

- **Government / policy:** Need for greater medical policy leadership that brings together stakeholders to build the evidence base and prioritize models in coordinated rather than competitive way
- **Funders:** Legacy systems and competing interests can slow the pace of change and overall scale of programs proven to work; similarly, while Weltel can be deployed horizontally across other disease areas, health systems and their funders continue to be somewhat siloed
- **Mobile Network Operators:** Poor network coverage can present constraints to reaching patients
- **Users:** Shared phone access can present difficulties reaching individuals in a timely manner

Potential actions

- **Medical policy leadership and coordination:** To address gaps in the evidence base and in streamlining of systems, need for greater leadership across the technology developers, the health systems players and funders. This can come from a number of players – including academic institutions involved in developing models (e.g., British Columbia Centre for Disease Control), alongside international champions and conveners (e.g., the mHealth Alliance, WHO/ITU)
- **Prioritize and integrate funding into large scale systems addressing HIV and beyond:** Weltel has received interest from PEPFAR in rolling out this model beyond the current pilot; more broadly, there is an opportunity for other large scale funders to prioritize and request these types of interventions in country funding proposals for HIV programs and health systems (e.g., the Global Fund's HSS funding)

Overview of EpiSurveyor

Concept

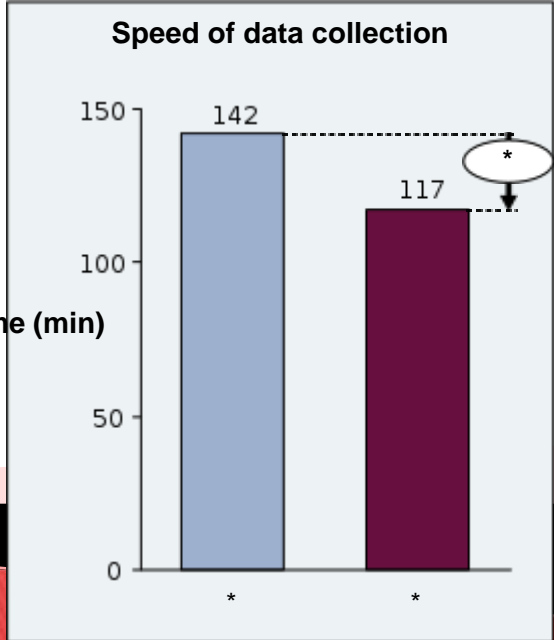
- EpiSurveyor is an open-source cloud computing data collection application designed to lower the barriers to collecting high-quality data by creating an inexpensive, easy-to-use software for data collection on handhelds mobile devices.
- EpiSurveyor's theory of change is that, if the cost and difficulty of collecting data is reduced, then data is more likely to be collected.

Value proposition

Advantages:

- **More and faster analysis** – the assumption is that digital data is easier to analyze which will make analysis more feasible and timely. Faster data means the ability to more quickly respond to changing circumstances.
- **Lowered cost of program assessment** – Current systems for quality data collection are too costly and only available to well-funded programs

- **Promotion of standardization and meta-analysis** – No universal system for sharing data collection instruments currently exists. EpiSurveyor survey files, which as electronic files care easy to catalog, download, share, and use, can provide a common platform for sharing those data collection instruments that represent best practices.
- **Uses:** Managing disease outbreak such as polio or malaria, ongoing data collection, supply chain management in US, Africa and Latin America.
- **Results:** An End Use Verification of the President's Initiative for Malaria was carried out in Ghana in order to monitor malaria supply chain. Results indicated 3 critical areas of impact:
 - Time – See graph
 - Data quality – Negligible difference. 1.5% difference between the two methods.
 - Ease of use – 100% quality. Respondents would prefer to replace paper-based data collection with EpiSurveyor



Market

- **Current scale:** Nearly 3000 users; >100 000 records uploaded



Overview of Ziquitza Healthcare Ltd, 1298 Ambulances (1/2)

Concept

- An easy-to-remember telephone number for the rapid delivery of emergency services via ambulance in urban and suburban areas
- Social-enterprise model; 1298 is contracted by government as part of a public-private partnership to offer emergency services through official channels (initially funded by Acumen Fund, and implemented by Ziquitza Healthcare Ltd. In conjunction with governments in Rajasthan, Mumbai and Kerala)
- Founded in 2005

Value proposition

- **Advantages:** Extends reach via mobile – 90% of calls to 1298 come from mobile phones, often from people who would not otherwise have been able to communicate with emergency service providers; radio dispatch sends the closest ambulance with appropriate equipment and crew to the caller's location
- **Results:** 70,000 calls answered in five years; measurable impact on maternal mortality in childbirth (50% of calls are to support pregnant women, resulting in reduced infant mortality and fewer complications in childbirth)
- **Beneficiaries and willingness to pay:** Patients in need of emergency services and transport; Customers are charged on a sliding scale depending on the kind of hospital that patients choose for treatment, with the poorest patients receiving discounts of 50 to 100%

Market

- **Current scale:** Grew from 10 ambulances to 280; Expects to have 1,000 ambulances serving millions of people by 2012
- **Current revenues and costs:** Full financials undisclosed, but have been awarded \$80m in government contracts for free or subsidized services in several states.
- **Estimated costs to scale:** Already at scale
- **Competition:** There are three competing ambulance and emergency services currently operating in Mumbai and across the country but, at present, the high level of demand outweighs competition.



Overview of Ziquitza Healthcare Ltd, 1298 Ambulances (2/2)

Challenges across the ecosystem

- **Financing:**
 - **Profitability:** Ziquitza's profitability is driven by the ability to operate in high population density areas where the mix of 'ability to pay' allows for cross-subsidization. Alternatively, (recognizing that these economics are not often available) Ziquitza works in partnership with government and has realized nearly \$80M in government contracts to provide its services.
 - **Primary revenue drivers** include fees for emergency transfer to private hospitals, fees for general hospital transfer, and to a lesser extent, contract services from the government.
 - **Primary costs include:** Fixed costs include the ambulance fleet and call centers; variable costs include human resources (staff of over 240), fuel costs, maintenance and repairs, and short codes – negotiated for free based on current government policy
 - **Constraints of tiered pricing model and cross-subsidization:** The tiered pricing model depends on a diverse patient mix and cannot be rolled out to rural areas where there are few middle- and high-income patients; more consumer education may be needed to encourage greater use of existing services

Potential actions

- **Grow government contract business:** One promising area for revenue growth is with government contracts, which currently is a smaller share of business. By working with the government, and customizing services to meet their needs in the markets in which it currently pays for transfers and other services (e.g., potentially, employee care), it can increase its revenue potential
- **Grow higher-end and lower-end customer base:** Additionally, by growing the share of higher end customers, who can pay fees and help stabilize the top line of Ziquitza's model, there is a clearer path to profitability.
- **Provide subsidies or other incentives for roll-out in rural and/or lower income areas:** While profitability may depend upon growing higher-end customer segments, given the need and utility of serving rural areas and populations, the government and/or other funders can incentivize profitable expansion by providing subsidies for lower end customers served and expanding the geographic reach of the business. This can be done by subsidizing the cost base and otherwise enable this business model – e.g., such as that which is used for short codes.

Other Uses of Mobile Phones in Health Care in Emerging Markets

Type

Remote Monitoring and Compliance

Description

- Use SMS text messages or calls to facilitate and coordinate activities of field-based health providers.
- Every Child Counts in Kenya uses SMS to register patients and send in health reports to a central web dashboard that allows a health team to closely monitor the health of their community
- Qualcomm and Life Care Networks Launch 3G Mobile Health Project to Help Patients with Cardiovascular Diseases in China. In this project, smartphones automatically send patient data, over China Telecom's 3G network, for real-time analysis to a cardiac specialist in the Beijing Life Care Networks Call Center. Doctors provide real-time feedback to patients and clinic staff via SMS or a phone call.
- Powerful messaging features help facilitate communication between the members of the health system and an automated alert system helps reduce gaps in treatment.

<http://www.who.int/bulletin/volumes/87/8/08-060905/en/>;
<http://www.marketwatch.com/story/qualcomm-and-life-care-networks-launch-3g-mobile-health-project-to-help-patients-with-cardiovascular-diseases-2011-09-07>

Other Uses of Mobile Phones in Health Care in Emerging Market

Type

Health Education

Description

- Helplines are provided as a means for patients to receive advice or consultations on a variety of topics
- In South Africa, the Eastern Cape Health Call centre is a helpline service which offers phone consultations, counseling, service complaints, and information on facilities, drugs, equipment, and/or available mobile health clinic
- In Mexico, a medical hotline called MedicalHome lets patients send medical questions via SMS
- Mobile phone consultation for community health care in rural north India

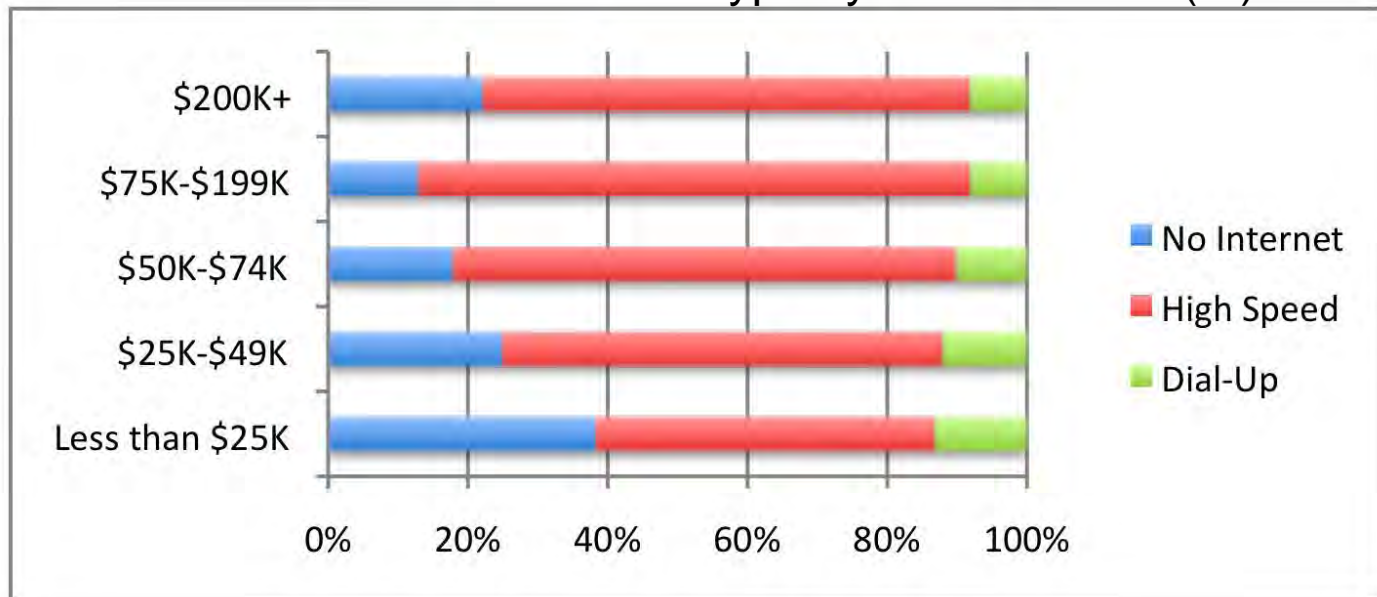
Health insurance

- Being used to assess coverage and utility of health insurance schemes and as a vehicle to provide health insurance to underserved populations e.g. the government of Ghana is using mobile phones to collect data to assess whether the poor are benefiting from the country's National Health Insurance Scheme
- Anadach working with an HMO in Nigeria to pilot premium payment by mobile phone

Mobile Phone Vs Internet penetration in U.S.

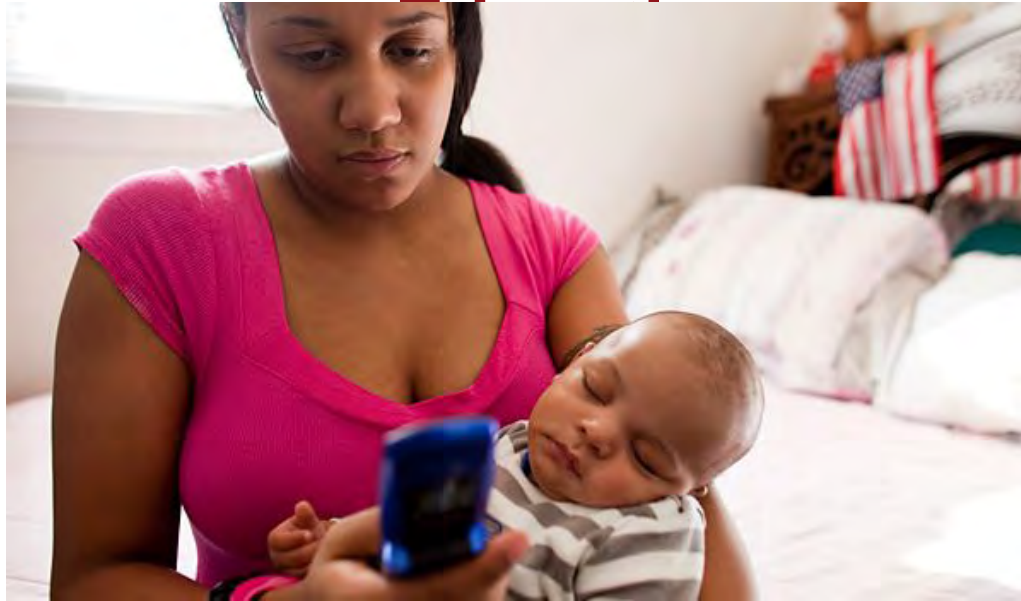
- ▶ There are over 303 million phones in the US, which is equal to a 96% penetration compared to 78% Internet penetration which varies by various factors including income, geographic location, demographics. Mobile phone penetration is expected to reach 100% by 2013.

Home Internet Connection Type by Income Level (%)



Source: Nielsen Company Report: An Overview of Home Internet Access in the U.S.

U.S. Example of Mobile Phones Use in Health



Text4baby:

Parents can use this free text-messaging service, available in English and Spanish, to receive three text messages a week with tips on pregnancy and caring for a baby. Users can sign up by texting BABY (or BEBE in Spanish) to 511411.

http://images.businessweek.com/ss/10/08/0823_mhealth/6.htm

Challenges with Mobile Phones in Health care

- Regulatory issues – including roles of providers e.g South African Association of Physicians
- FDA Regulations and Clarity around Apps
- Privacy Issues
- Key Provider Groups engaging on the platform – AMA, Nurses, Pharmacists etc
- Training next generation of providers
- Hospitals – Social Media Phobia, Information Risks
- Organizational Challenges/Complex US Health Financial Flows e.g reimbursement
- Connectivity – especially in rural America, 3G and 4G
- Any other constraints?

Anadach M-Health Portfolio

in spite of challenges we are bullish

- Based on SMS which is widely available and used. Can be language specific
- Health education to general population
- Targeted Disease Messaging e.g Diabetes, hypertension
- Partnering on remote disease monitoring e.g Hypertension and Diabetes
- Mobile Health Insurance Platform leveraging mobile banking

Do you know?

How many mobile phones in the world?

What percentage of mobile phones are in developing countries?

How many mobile phones in the US?

What percentage of the Americans have access to the internet?

What is the largest facebook market? What is the second?

What is the largest mobile facebook?

Any Questions?

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