

21stMedicine.com || Population Health Market Trends ♦ Analysis

Opportunities for Revolution

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Healthcare Horizons : Health of US Society by the Numbers

To work in healthcare, to strive to improve the lives of domestic and global citizens, is more than an occupation. It is rather a calling. The meta-trends of healthcare today are consolidation, disintermediation (streamlining / removal of the middle), revolutions in devices, and process standardization. To all of us who live and breathe the battles of our communities to maintain mobility, fluidity, and acceptance of what is, be it disease and pain or health and wellness, uncertainty runs high. Demand for our services will rise through 2030-2035, yet rewards will be decoupled from risk. The incomes of many health workers will drop relative to both work volume and risk. System-wide insolvency is not unreasonable in late stage care (age-based rationing as an emergent property of capitated systems). The need for revolutions in process, care delivery, and outcomes/value-based medicine are growing.

Complexity & Opportunity

Cancer

2014 will see 1.66mm new cancer cases. 585k Americans will die from cancer in 2014. 30% of cancer deaths attributed to smoking. 232k new female breast cancer cases (2360 men). 233k new prostate cancer diagnoses, 136k new colorectal cancer. \$216.6 billion estimated overall cancer spend in 2009 per NIH (expected higher in 2014).¹ Major opportunities exist in mobile, pain management, and quality of life.

Obesity

70% of American adults according to the Amer Heart Assoc are either overweight or obese. 16.9% of US children between 2-19 are obese, 14.9% overweight (combined at 23.9mm children/young adults); about 35% of US adult population is obese (78 million adults).² Estimated cost of treating obesity in 2008 was \$147 billion, roughly \$1429 per person per year higher than those with normal weight.³ In 2008 57mm US adults were pre-diabetic and 23.6mm diabetic, currently the 7th leading cause of death annually. Obesity can be linked to between 100-400k deaths per year. Approximately \$117 billion in direct and indirect costs can be calculated (preventive, diagnostic, treatment services relating to weight vs. absenteeism). Obesity related costs account for 6-12% of total US health care.⁴

Heart/Cardiac

Coronary Heart disease is ringing in \$108.9 billion annually, including cost of care, medications, and lost productivity. 600k US individuals will die from heart disease this year, noting 380k of these from CHD. We expect to see 720k heart attacks this year, 515k are first events and 205k are secondary events. The map relating death by heart attack across US geography nearly exactly matches population metrics for obesity.⁵ Major reduction in cost is unlikely as populations resist adoption of healthier lifestyles. Both direct and indirect CHD and stroke, 2010 was \$204 billion for heart disease, \$46B hypertension, \$36B stroke, \$28B other CVD.⁶

Mental Health

We can look at antidepressants as a proxy for US mental health overall. Mental health brings us close to the idea of disposable energy; realization of will and purpose requires the ability to direct action. Anxiety, depression, and all related mental health conditions limit our flexibility in achieving fulfilling lives, particularly through restriction in willingness to embrace vulnerability, which is a foundational core of human relationships. As of Aug 2013, one in five Americans are on at least one psychiatric medication, including antidepressants, antipsychotics, ADHD meds, and hypnotics. Apr 2013, J Psychotherapy and Psychosomatics, while one in ten is on antidepressant med at any given time that figure becomes one in four for women in their 40s and 50s. Strict adherence to diagnostic principles as outlined in clinical literature seems to be lacking in as much as 2/3 of diagnosis of depression in a 5000 patient sample set, meaning that antidepressants are over-prescribed.⁷ Pipeline of future meds is thin across the board for all mental health concerns; many trials show no better than placebo. 2011 Amer Soc for Clin Pharmac and Thera 13 of 300 abstracts pertained to psychopharmacology and not a one to a new drug. Capital for pharmacology research is weighted to cancer, heart disease, and diabetes noting well-defined biological markets and feasibility to defining and metricing end-points."⁸

General Rx

13 prescriptions per American in 2011. More than 20% of US population has taken more than three 3 medications during the last month. Understanding drug-drug interaction between two to three is exceedingly difficult. More than 75% of MD visits involve Rx drugs. More Americans die from prescription med overdose than from cocaine and heroin combined. Since 2008 more US citizens have died from Rx overdoses than from

1 <http://www.cancer.org/research/acrsresearchupdates/more/10-must-know-cancer-statistics-for-2014>

2 http://www.heart.org/HEARTORG/GettingHealthy/WeightManagement/Obesity/Obesity-Information_UCM_307908_Article.jsp

3 <http://www.cdc.gov/obesity/data/adult.html>

4 http://en.wikipedia.org/wiki/Obesity_in_the_United_States

5 <http://www.cdc.gov/heartdisease/facts.htm>

6 http://www.heart.org/idc/groups/ahamah-public/@wcm/@sop/@smd/documents/downloadable/ucm_459072.pdf

7 <http://well.blogs.nytimes.com/2013/08/12/a-glut-of-antidepressants/>

8 <http://www.nytimes.com/2013/08/20/health/a-dry-pipeline-for-psychiatric-drugs.html>

car accidents. In 2011, 16,500 US individuals died from Rx opioids or equivalent. US individuals consume roughly 80% of opioid painkillers worldwide.⁹

Total spend in 2013 on Rx drugs was roughly \$280 billion. CDC reports that 9 out of 10 individuals over 60 y/o have taken one Rx medication within the last month. Approximately 750,000 visits to the ER each year are on account of adverse reaction to Rx meds. A substantial percentage of drugs brought to market are reaching stratospheric cost, noting that many (11 of 12) new-to-market drugs approved by FDA in 2012 per running more than \$100k per year per patient. Among persons 35 to 64, suicide rates rose by about 30% from 1999 to 2010, more take their own lives each year than are killed by car accidents. Finally, drugs have become a huge profit center; the 11 largest pharma corporations earned roughly \$85 billion in profits in 2012.¹⁰ US children are 3x more likely to take ADHD medication than their European counterparts. Hitting close to the authors' home, CT lost 257 to heroin in 2013 up from 174 in 2012, believed to be strongly correlated with the rise in opioid consumption.

Women's Health

Breast cancer remains the major killer of women after heart disease. CT holds the highest percentage of new breast cancer diagnosis per population of any state in the US (excluding Washington D.C. which is 140 new cases per 100,000 compared to CT's 136).¹¹ The US Agency for Healthcare Research and Quality, a seminal authority of health matters, AHRQ, reminds us that incontinence is a major vector for depression, obesity, and comorbidity.¹² Payers remain reluctant to authorize routine use of novel, non-surgical (non-proven) technologies, noting particular examples in incontinence and sexual health, a veritable scourge on US female population, affecting up to 30% of adult women.¹³

1999 JAMA reported that 43% of US women experienced sexual dysfunction (lack of interest in sex, phobia, inability to maintain excitement, chronic difficulty in attaining orgasm, pain during intercourse, involuntary vaginal spasms, genital pain following stimulation). Harvard Women's Health has reviewed this data as well as that published by The Kinsey Institute, an authority on sexual health, and notes tremendous complexity in unwinding the sexual needs and behavior of men and women. It remains that a large percentage of women (up to 40%) experience major difficulty in achieving a fulfilling sex life. There are no sexual health devices about which we are aware that are payable by CMS/Medicare for anorgasmia; Viagra, Levitra, and male erectile dysfunction pumps are covered services.¹⁴ We would argue that female sexual health and function is central to societal health and is currently undervalued noting room for advancement.

Diabetes

The International Diabetes Federation (IDF) serves as an umbrella for diabetes societies in 170 countries. In its 2013 Diabetes Atlas, Type II diabetes is increasing at steady rates globally per poor diet, sedentary lifestyle, and increased longevity. The largest number of individuals living with diabetes worldwide are those between 40 and 59. Approximately 10% of the world's population will have diabetes by 2035. Total global spend on diabetes in 2011 was \$548 billion in US dollars, 11% of total world health dollars. 175 million world individuals are currently undiagnosed and progressing. The total number of individuals with diabetes will increase by 55% from 2013 to 2035, estimated growth from 382 to 592 million global individuals.¹⁵

The NIH's National Diabetes Education Program estimates that 25.8 million Americans have diabetes or 8.3% of US population, of these 7 million are undiagnosed. In 2010, there were 1.9 million new Type II diagnoses. Incidence rates have risen from 1.5 million diagnosed cases in 1958 to 18.8 million diagnosed in 2010. Current estimates predict that 79 million adults aged 20 or older have pre-diabetes.

9 <http://www.drugrehab.us/news/americans-gulping-down-80-percent-of-worlds-opiates/>

10 <http://www.zerohedge.com/news/2014-02-15/drugging-america-summarized-19-mind-altering-facts>

11 <http://ww5.komen.org/BreastCancer/Statistics.html#state>

12 <http://effectivehealthcare.ahrq.gov/index.cfm/search-for-guides-reviews-and-reports/?productid=1021&pageaction=displayproduct>

13 www.incontrolmedical.com

14 http://www.health.harvard.edu/newsweek/What_is_female_sexual_dysfunction.htm

15 http://www.huffingtonpost.com/riva-greenberg/diabetes-stats_b_4273505.html

Estimated US cost of diagnosed diabetes was \$245 billion as of 2012, noting \$176 billion in direct and \$69 billion in indirect cost. Inpatient care comprises 43% of total medical spend, Rx meds and treatment at 18%, diabetic supplies at 12%, MD office visits at 9%, nursing/residential care at 8%. Individuals with diabetes incur on average \$13,700 per year in medical spend, with \$7,900 attributed to diabetes. Individuals with diagnosed diabetes incur 2.3x higher healthcare cost than those without.

Of total US healthcare spend about 20% is incurred on behalf of patients with diagnosed diabetes and about half of that \$1 in \$5 dollars spent can be directly linked to diabetes. This further suggests that care of patients with diagnosed diabetes is more costly than the general populace, even for non-diabetes related care. Indirect costs are broken down as \$5 billion in absenteeism, \$20.8 billion in reduced productivity while at work for employed individuals, and \$2.7 billion in reduced productivity for those not in labor force, \$21.6 billion can further be attributed to inability to work based on disease-related disability, and finally lost productive capacity due to early mortality is \$18.5 billion per year. The American Diabetes Association revised its healthcare spend burden up from \$174 billion in 2007 to \$245 in 2012, a 41% increase, noting that the cost would be even higher when including pain, suffering, the cost of non-reimbursed care and/or non-paid caregivers, and the costs to society of undiagnosed diabetic patients.

A 2010 study published by Popul Health Metrics suggested that as many as one in three US adults may be diagnosed with diabetes by 2050, not-including prediabetic patients.¹⁶ Diabetic foot ulcer care adds \$9-13B.¹⁷

Additional Market Thoughts

CEO compensation by health insurance entities is a symptom of unsustainability. John Hammergren of McKesson pulls \$285mm over 5 years (\$131mm in his 1st year). Stephen Hemsley of UnitedHealth Group is noting \$169.3mm in 5 years (\$48mm in year one).¹⁸ 2013 Aetna's CEO Mark Bertolini \$30.7mm, WellPoint/Anthem at \$17mm, and Cigna at \$13.5mm.¹⁹ The reality, however, is likely that each of these individuals will earn much more than the listed amounts per stock, bonus, and deals.

Healthcare premiums are rising but at a slower pace. Aug 2013, The Kaiser Family Foundation reviewed a 4% increase from 2012 to 2013 in premium growth, compared to a 1.1% increase in inflation and a 1.8% wage growth. Kaiser warns of a steady rise in deductibles for sub-200 employee businesses. 58% of workers are enrolled in health plans with a \$1000+ deductible, up from 49% in 2012. For all employer-sponsored plans, note a 3x increase in the volume of high deductible plans since 2006, forcing cost burden on the insured.²⁰

RAND Corp finally reports a typical family's monthly health care spend has risen from \$805 in 1999 to \$1420 in 2009. From 1999 to 2009: Employee premium contribution: \$85->\$195, employer premium contribution: \$240->\$550, out-of-pocket spending:\$135->\$235, taxes devoted to healthcare:\$345->\$440. While the percentage of GDP comprised by healthcare dollars has grown substantially in ten years, the value for that spend is unclear. Americans do not rank particularly well across multiple metrics like quality of life and life expectancy compared to other Western countries.²¹

Closing

A paradox of the US Healthcare System is the separation of incentive and cost. Few would argue that population health statistics across myriad verticals demonstrate great reason for pause. Our population health is a major liability to economic output and to the viability of US position in coming decades. Healthcare providers today shoulder the brunt of this work. Innovations in care delivery, outcome management technology, and rethinking catalyst for change are essential. Can we foster the necessary change?

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16 <http://care.diabetesjournals.org/content/36/4/1033.full>

17 <http://www.medscape.com/viewarticle/821908>

18 http://www.forbes.com/lists/2012/12/ceo-compensation-12_land.html

19 <http://www.healthcare-now.org/health-insurance-ceo-pay-skyrockets-in-2013>

20 <http://www.washingtonpost.com/blogs/wonkblog/wp/2013/08/20/health-costs-are-growing-really-slowly-americans-havent-noticed/>

21 http://www.rand.org/content/rand/pubs/research_briefs/RB9605/index1.html.html