



MASTER market analysis

“Significantly reducing the cost of cardiovascular disease
readmissions for patients with health illiteracy”

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DEATHS - GLOBAL

- Classified as a Pandemic by [WHO](#)
- Globally: 17.9 M deaths per annum – 31% of all deaths* ([Reference](#): WHO 2019)
- Globally: number of people with CVD 353,121,000* ([Reference](#): Global Atlas of CVD. World Heart Federation 2018)
- Globally: By 2030 – number of deaths due to CVD 23.6 million per year.*
- Globally: >75% CVD deaths occur in low-income and middle-income countries.* ([Reference](#): WHO 2019)
- Globally: Number of CABG surgeries each year: 800,000.* ([Reference](#): Coronary Artery Bypass Graft (CABG) Market Analysis and Forecasts 2018-2025. Grand View Research.)
- US: Cardiovascular disease (CVD) remains the leading cause of death in the United States, responsible for 840,768 deaths (2016)*
- Australia: 43,500 deaths (2017) 30% of all deaths* ([Reference](#): Australian Heart Foundation 2018)

AUSTRALIA

- CVD affects 4.2 million Australians.* ([Reference](#): Australian Heart Foundation website 2019)
- CVD hospitalisations: 576,000* ([Reference](#): Australian Heart Foundation website 2019)
- Heart attack: each year 57,000 Australians.* ([Reference](#): Australian Heart Foundation website 2019)
- Women:* ([Reference](#): Women and Heart Disease: Cardiovascular profile of women in Australia. AIHW June 2010.)
 - 2 million Australian women have CVD.*
 - 200,000 hospitalisations* (2006-2007)
 - Less likely* when hospitalised to receive: diagnostic treatments; various coronary interventions such as CABG.
 - Less likely* to be referred to cardiac rehab.
 - Unconscious bias.* ([Reference](#): University of Sydney professor Clara Chow, cardiologist at Westmead hospital.)

NEW ZEALAND

- ([Reference](#): New Zealand Heart Foundation website 2019)
- 186,000* people living with heart disease.
- 33%* of all deaths.
- Deaths from cardiovascular disease (CVD) among *Māori* are more than *twice* that of non-Māori
- 4 out of 5 Māori males* and 3 out of 4 Māori females have *poor health literacy skills* ([Reference](#): Health Literacy and Māori. Results from the 2006 Adult Literacy and Life Skills Survey. New Zealand Ministry of Health.)

US STATS

- Each year, *785,000* Americans will suffer a new myocardial infarction (MI; heart attack) and nearly *470,000* will have a recurrent attack. *Total: 1,255,000* per year. ([Reference](#): American Heart Association Presidential Advisory 2011)
- North America: 56.9% CVD share in global CABG market.* ([Reference](#): Coronary Artery Bypass Graft (CABG) Market Analysis and Forecasts 2018-2025. Grand View Research.)
- US: other figures: number of CABG procedures 200,000* per year. ([Reference](#): <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5906252/>)
- US: Over 1.8 million stents implanted per year.* ([Reference](#): iData Research. <https://idataresearch.com/over-1-8-million-stents-implanted-per-year-in-the-u-s/>)
- US: Number of providers = 7,200. Number of hospitals doing cardiac procedures ~1,700.* ([Reference](#): Trends in U.S. Cardiovascular Care2016 Report From 4 ACC National Cardiovascular Data Registries)
- 70 million Americans* suffer from CVD – and *90 million Americans with health illiteracy* - overlap. ([Reference](#): International Society for Vascular Health, "Vascular Health and Risk Management 2006")
- Women:* ([Reference](#): American Heart Association website 2019)
 - No.1 cause of *death* in American women, claiming over *400,000* lives each year.
 - Women of color* are disproportionately affected by heart disease; the *death rate was 25% higher* for black women than for white women in 2015.
 - Women are *1.5 times less likely* than men to be referred to *cardiac rehabilitation*.

PROJECTIONS

- US: 30% increase* in number of people over next 20 years with CVD. *45.1% population (130 million people).* ([Reference](#): American College of Cardiology 2019)
- US: 2016: USD\$555 billion* per yr. *2035: USD\$1.1 trillion per yr* ([Reference](#): American Heart Association. CVD: A Costly Burden for America – Projections through to 2035. 201)

UNITED KINGDON

([Reference](#): British Heart Foundation website 2019)

- 7.4 million* people living with CVD
- 170,000 deaths* per year – *28%* of all deaths
- Healthcare costs relating to heart and circulatory diseases are estimated at £9 billion each year.
- 5 million adults* are “functionally illiterate”

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IMPACT OF HEALTH ILLITERACY

- International Society for Vascular Health, "Vascular Health and Risk Management 2006". "We will need to address the health literacy problem in order to make the next great advance in postponing cardiovascular disease".
- HRRP: Coach patients on discharge instructions and self-management. Improve patient education. Confirm patient comprehension.
- US: USD\$29 billion pa in additional annual CVD healthcare costs attributable to poor health literacy. (Reference: NCBI 2006 figures)
- US: 90 million people health illiterate. (Reference for dot points above: International Society for Vascular Health, "Vascular Health and Risk Management 2006")
- US: health illiteracy among indigent and minority patients in urban areas: >80% (Reference: Taking the Time to Care: Empowering Low Health Literacy Hospital Patients with Virtual Nurse Agent <http://relationalagents.com/publications/CHI09.VirtualNurse.pdf>)
- Germany: 78% of German CVD patients low SES are health illiterate (Reference: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6283547/>)
- 1.71 times more likely to be readmitted to ED. (Reference: <http://www.bu.edu/fammed/projected/publications/Mitchell,%20Sakikova,%20Jack%20MPO%20-%20Health%20Literacy.pdf>)
- Patients forget between 40 and 80 percent of what the doctor tells them as soon as they leave the doctor's office. More worrisome, though, is the fact that 50% of what patients do remember, they remember incorrectly. (Reference: Building the Case for Health Literacy. National Academies of Sciences, Engineering, Medicine. 2018)
- Australia: 41% population have adequate health literacy. 60% population deficiencies in health literacy. (Reference: Australian Bureau of Statistics 2008)

THE COSTS OF NON-ADHERENCE TO MEDICATION AND HEALTH CARE REGIMES

US – non-adherence results in:

- 125,000 deaths per year from cardiovascular disease.
- 10 percent of all hospital admissions
- 23 percent of all nursing home admissions
- 112 million unnecessary medical visits
- Extra \$300 billion per year in excess spending to nonadherence

(Reference: American Medical Association: Health Literacy and Patient Safety: Reducing the Risk by Designing a Safer, Shame-Free Health Care Environment 2007. EXCELLENT REFERENCE).

MEDICAL LIABILITIES DUE TO HEALTH ILLITERACY

- A growing number of malpractice cases have been settled in favor of patients who were not appropriately informed about medical decisions.
 - Poor communication or miscommunication between physician and patient is the leading reason for patient dissatisfaction, which increases the risk for lawsuits.
 - Health care professionals may be held liable for errors due to miscommunication and lack of patient understanding that result in harm to patients.
 - Patients who miss appointments may have a viable lawsuit if they can prove their failed appointment resulted in harm due to a doctor's unclear, inadequate or omitted instructions and/or advice.
 - "Continuum of confusion"
- (Reference: American Medical Association: Health Literacy and Patient Safety: Reducing the Risk by Designing a Safer, Shame-Free Health Care Environment 2007. EXCELLENT REFERENCE).
- The average 250-bed hospital spends between \$300,000 and \$1 million annually defending medical malpractice claims. This is not for paying the claims.
 - U.S. hospitals spend between \$173 million and \$624 million annually on legal fees associated with poor communication
- (Reference: Building the Case for Health Literacy. The National Academies of Sciences, Engineering and Medicine. 2018. EXCELLENT REFERENCE)
- Communication (31%) was one of the top three contributing factors to mal practice liability (MPL) - other two being judgment and technical issues. Communication between patient/family and providers ranged from 15% to 22%. (Reference: Medical Malpractice in America: a 10-Year Assessment with Insights. CRICO 2018 CBS Benchmarking Report.)

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CVD DIRECT MEDICAL COSTS

- US: 2016: USD\$555 billion per yr. 2035: USD\$1.1 trillion per yr (Reference: American Heart Association. CVD: A Costly Burden for America – Projections through to 2035. 201)
- Australia: AUD\$8.8 billion per yr ~ 12% total health expenditure (Reference: Australian Heart Foundation 2018)

30-DAY READMISSION RATES:

- US: 16.1% 30-day readmission rate; 90-day readmission rate 24%. (Reference: "Coronary artery bypass graft readmission rates and risk factors - A retrospective cohort study" 2018. NCBI)
- Australia: 16.7% 30-day readmission rate; 40.2% 90-day readmission rate.

UNPLANNED READMISSIONS

- 25% of patients have unplanned readmissions. (Reference: Journal of the American College of Cardiology (March 2019))

MEDICARE READMISSION PENALTIES

(Reference: <https://khn.org/news/hospital-penalties/> - "Look Up Hospital Penalties")

- Maximum penalty: 3% reduction of a hospital's payments for all Medicare admissions – not just readmissions.
- Average hospital penalty (among penalized hospitals only) was -0.74%
- 2018: 80% of 3241 hospitals CMS evaluated face penalties. (Reference: Advisory Board. 2017)

Sample Hospital DATA:

- Number Of Heart Procedures Per Year – Sample hospital (Reference: sample hospital website 2019)
 - More than 550 open-heart procedures per year.
 - 12,000 cardiac procedures per year
- Medicare Readmission Penalties
 - 2015: sample hospital was fined \$942,000 in Medicare penalties 0.67%
 - 2016: 0.86%
 - 2017: 0.66%
 - 2018: 0.41%
 - 2019: 0.11%
- Inpatient Surgery and Procedures Costs At sample hospital (2011 figures)
 - Average amount charged by sample hospital for major cardiovascular: \$55,441.00
 - Average amount paid by Medicare to sample hospital for major cardiovascular procedures without major complications: \$20,141.00
- Litigation Costs
 - Sample hospital: \$5 million pa