

# A JOURNEY TO DEVELOP AN APP TO ENGAGE AND EDUCATE PEOPLE WITH DIABETES IN WESTERN SYDNEY



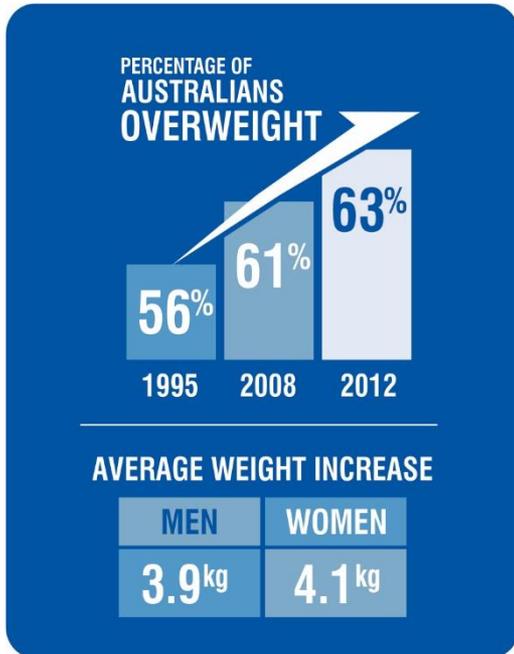
PROF GLEN MABERLY

Director Western Sydney Diabetes  
Integrated and Community Health  
Western Sydney Local Health District

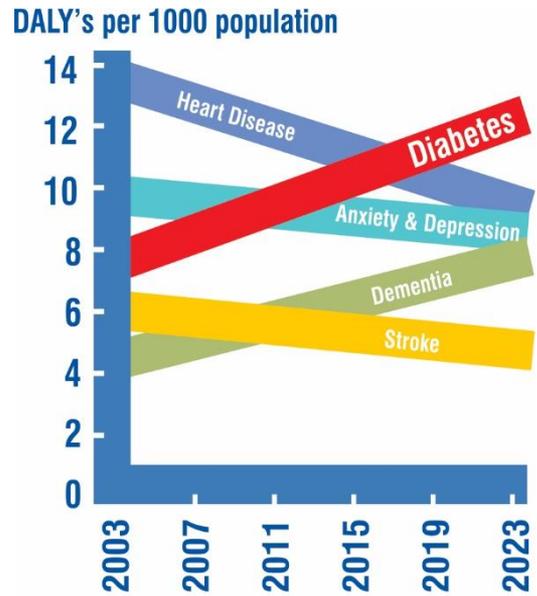




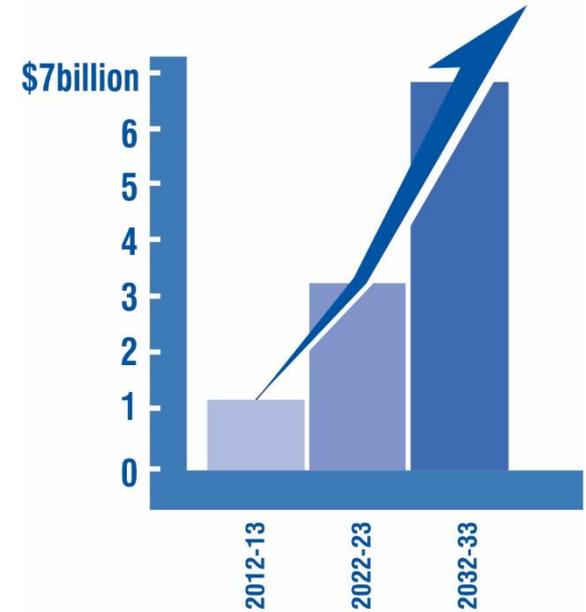
# THE DIABETES EPIDEMIC



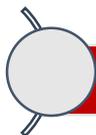
Overweight problem



Diabetes trajectory for prevalence overtaking other diseases



Projected Change in expenditure for Type 2 Diabetes

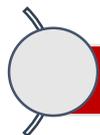


Why do we need an app

# WHY A DIABETES SELF-MANAGEMENT APP

“Diabetes patients are limited in the time they can spend face to face with health professionals. In total this is estimated to be around eight hours per year. Amongst the other benefits this app will assist them to manage their condition more effectively for the remaining 364 days of the year. “

**Sturt Eastwood**  
CEO Diabetes NSW



Why do we need an app

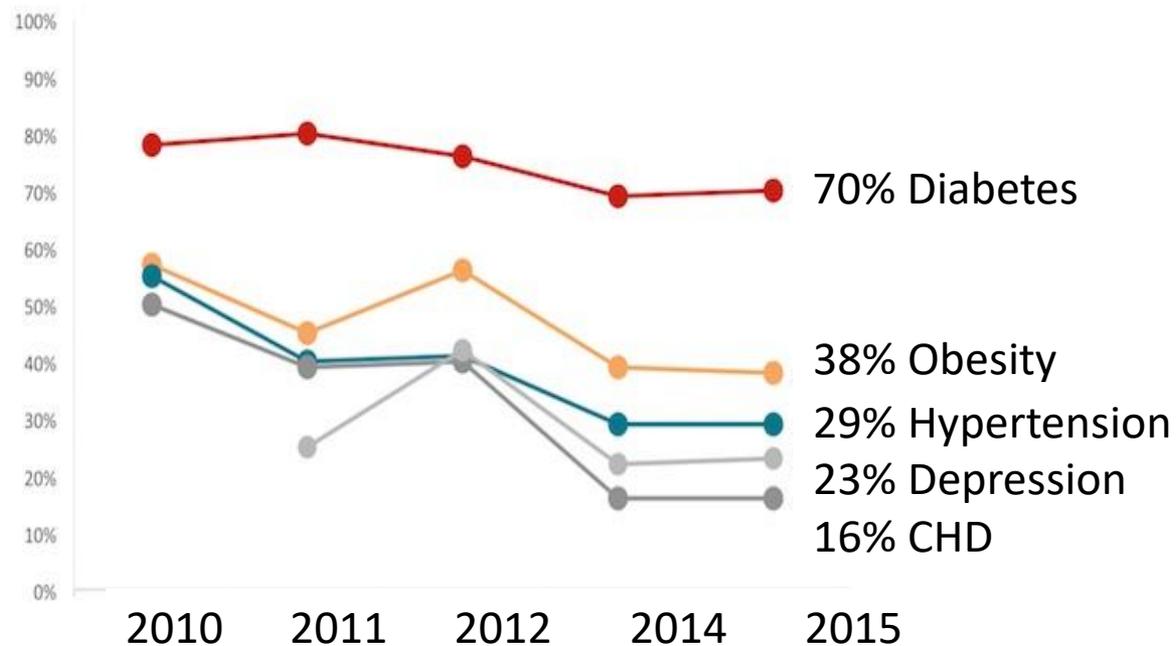


# DIABETES APPS ARE TOPS

Which therapy fields offer the best market potential in the next 5 years?



**Survey: Diabetes apps are top prospect for developers** - By Jonah Comstock January 21, 2016



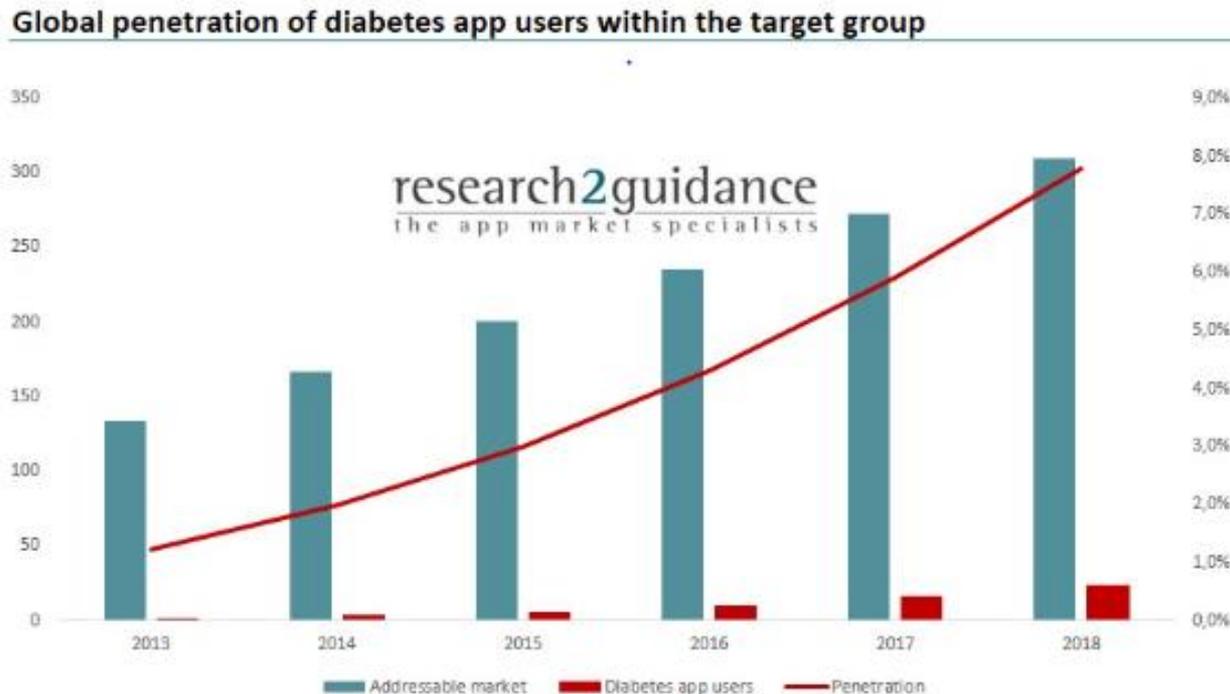
Research2Guidance report surveyed 5,000 developers  
More than 1,500 diabetes apps exist worldwide  
Leading publisher of diabetes apps sees about 120,000 downloads per year



Why do we need an app

# DIABETES APPS IN THE FUTURE

**Diabetes apps will be used by 7-8% of people with diabetes that have a capable device in 2018**



*Comment:* The chart is based on the results of the „Diabetes App Market Report 2014“. Addressable market includes people with diabetes (20-79y) that have a smartphone or tablet.

*Source:* IDF Diabetes Atlas, 6th edition, research2guidance, 2014  
[www.research2guidance.com](http://www.research2guidance.com)



Why do we need an app

# MOBILE APPS FOR THE MANAGEMENT OF DIABETES

Sarah Chavez, David Fedele, Yi Guo, Angelina Bernier, Megan Smith, Jennifer Warnick, and François Modave  
Diabetes Care 2017;40:e145–e146

Top Apps for diabetes and diabetes management in iTunes  
and Google Play

Selection criteria (n=89):

- free
- designed for patient
- not requiring subscription;
- in English

## Mobile App Rating Scale (MARS)

All scores have a maximal possible value of 5

**Table 1—App quality score, subjective score, and diabetes management tasks (n = 89 apps)**

Sections	Items	Item names	Mean	SD	Quality
Engagement	5	Entertainment; Interest; Customization; Interactivity; Target group	3.15	0.78	Acceptable-Good
Functionality	4	Performance; Ease of use; Navigation; Gestural design	3.79	0.68	Acceptable-Good
Aesthetics	3	Layout; Graphics; Visual appeal	3.43	0.76	Acceptable-Good
Information	7	Accuracy of app; Goals; Quality of information; Quantity of information; Visual information; Credibility; Evidence base	2.23	0.85	Poor-Acceptable
App quality score	19	All items in above sections	2.99	0.64	Poor-Acceptable
App subjective score	4	Recommendations; Usage; Pay; Rating	2.59	0.90	Poor-Acceptable
Diabetes management tasks	6	Physical activity; Nutrition; Blood glucose testing; Medication or insulin dosage; Health feedback; Education	2.81	1.68	2–3 tasks

This study suggests that additional work is needed to assess the clinical significance of apps for diabetes self-management, and that app developers should work closely with health care providers and patients when building such mHealth tools.



Why do we need an app

# EVALUATION OF IMPACT



## Cluster-Randomized Trial of a Mobile Phone Personalized Behavioural Intervention for Blood Glucose Control

CHARLENE C. QUINN, RN, PHD MICHELLE D. SHARDELL, PHD MICHAEL L. TERRIN, MD, MPH ERIK A. BARR, BA SHOSHANA H. BALLEW, BA ANN L. GRUBER-BALDINI, PHD

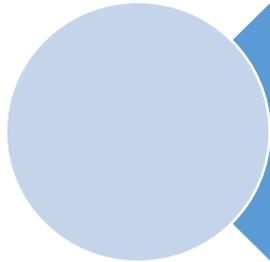
**The mean declines in HbA<sub>1c</sub> were 1.9% in the maximal treatment group** and 0.7% in the usual care group, a difference of 1.2% ( $P < 0.001$ ) over 12 months.

DIABETES CARE, VOLUME 34, SEPTEMBER 2011

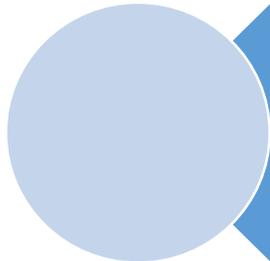


Why do we need an app

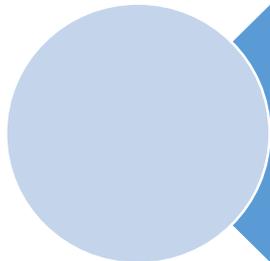
# DIABETES EDUCATION HIGHLY SCALABLE



How to educate everyone with T2D when Credentialed Diabetes Educators are limited



How to provide real time advice when it is needed

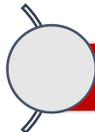
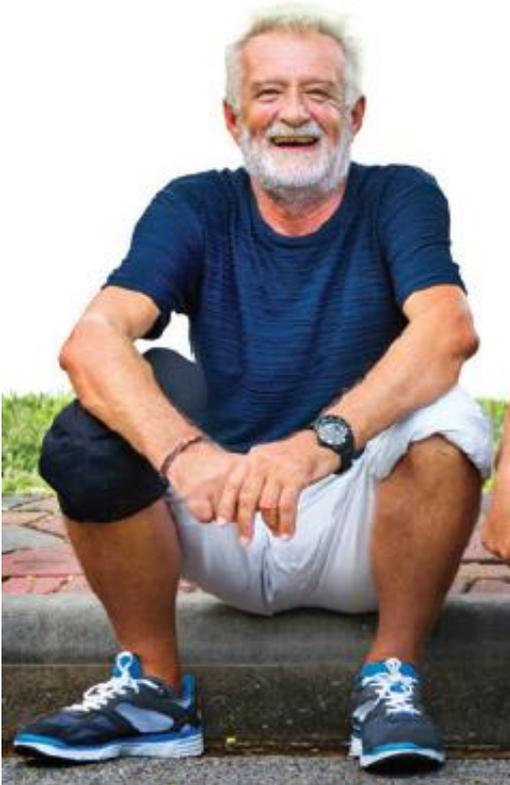


How to individualise advice for the level of health literacy and linguistic and cultural background



Why do we need an app

# How to connect with healthcare providers



Why do we need an app

# AS PART OF A SUITE OF INTERVENTIONS

## → SECONDARY PREVENTION AND MANAGEMENT



**HbA1c  
TESTING**



**LIFESTYLE  
COACHING**



**JOINT CASE  
CONFERENCING**



**HEALTH  
PATHWAYS**



**GP SUPPORT  
LINE**



**WSD  
APP**



**COMMUNITY  
PHARMACY**



**PRACTICE  
NURSE TRAINING**



**SHARED HEALTH  
SUMMARY**



**SAVE A  
LEG**



**COMMUNITY  
EYE PROGRAM**



**RAPID ACCESS  
CLINIC**



**CGM FOR  
DIAGNOSTICS**



**INTEGRATED  
CARE**



**HEALTH CARE  
HOME**



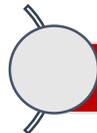
**IN-HOSPITAL  
CARE**



**EDUCATION  
CENTRES**



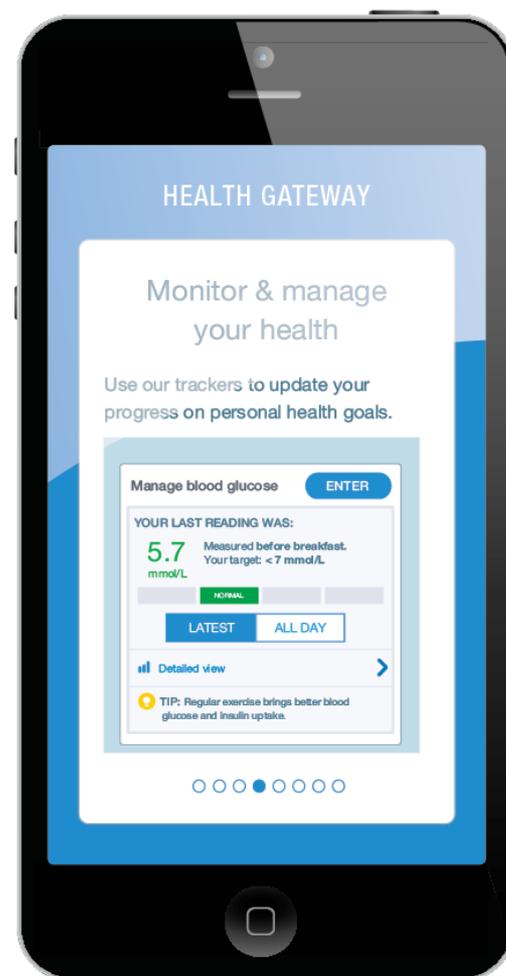
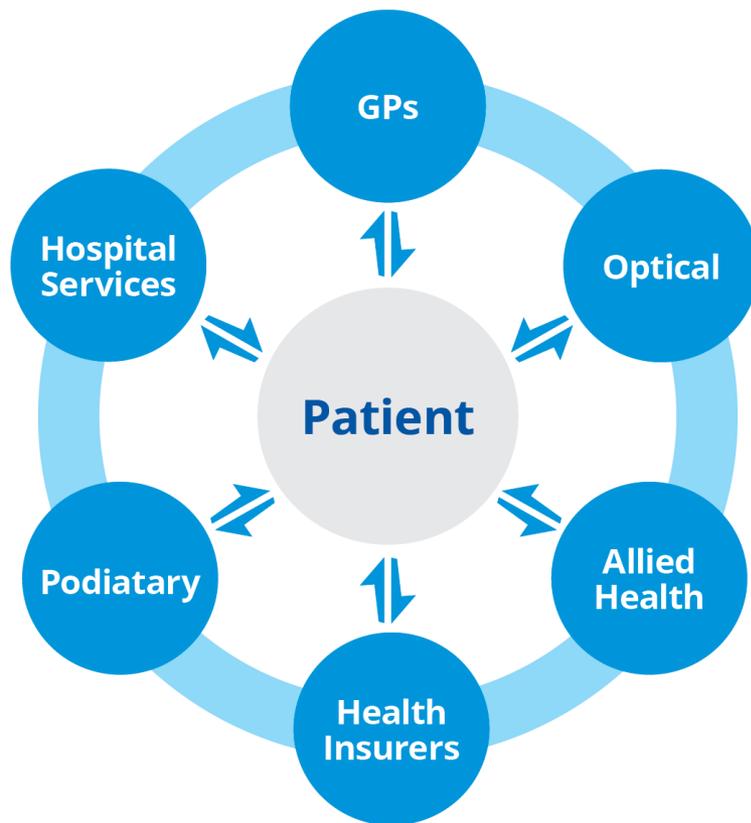
**BARIATRIC  
OBESITY CLINIC**



Why do we need an app

# HEALTH GATEWAY – WITH TELSTRA HEALTH

**CONNECTING PATIENTS TO THEIR CARE PROVIDERS LIKE NEVER BEFORE**



The app will be developed and robustly tested with 2000 Western Sydney patients, after which time it will be made available to the wider community.



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# LINKEDEHR Shared Care Plan

## Dynamic Shared Care Plan

### Health Summary

EMERSON GARDNER 20/10/1957

HCID: HC100008, IHI: 8003 6085 0002 9400

**Problems**

- 10/04/2014 Diabetes Mellitus, Type 2
- 10/04/2014 Hypertension
- 10/04/2014 Obesity

**Medications**

- Crestor Tablet 5mg  
Dose: 1 Freq. In the evening instructions: after meals; Route: Oral
- Diaben Tablet 500mg  
Dose: 1 Freq. In the morning instructions: with meals; Route: Oral

**Substance Use**

- 18/05/2014 Alcohol  
Pattern of drinking: 3 drink  
Pattern of drinking through day: 4 id  
Details of alcohol drinking behaviour: Current drinker  
Past drinking behaviour: Moderate  
Year alcohol consumption year started: 1896  
Smoking
- 18/05/2014 Tobacco: use and exposure: Smoker  
Smoking year started: 1998  
Cigarette consumption: 10 id

**Adverse Reactions**

- 18/04/2014 Cats Rash
- 18/04/2014 ACE inhibitors Muscle pain

**Vaccinations**

- 10/04/2014 Adacel Polio
- 10/04/2014 Fluvac

**Family History**

- 18/06/2014 Non-ATSI  
Mother: Cancer (Deceased 70yrs)  
Father: Heart attack (Deceased 85yrs)  
Father: Diabetes  
Father: Hypertension  
Father: Ischaemic heart disease  
Mother: Diabetes  
Mother: Breast cancer

**Social Summary**

- 18/06/2014 Social history. This is a test note regarding social history.  
Accommodation status: Own home  
Sexuality: heterosexual  
Marital status: Married

### Care Plan

EMERSON GARDNER 20/10/1957

HCID: HC100008, IHI: 8003 6085 0002 9400

Care Plan created: 07/07/2014 - Last updated 17/07/2014 13:24 by test again - Last updated by me: 17/07/2014 13:23

**Problems**

- 10/04/2014 Diabetes Mellitus, Type 2
- 10/04/2014 Hypertension
- 10/04/2014 Obesity

**Goals and Targets**

Goals and Targets	Activities	Assigned To	Status
			- Planned - No Referral
			- Planned - Again, Test - Referral accepted
			- Planned - No Referral
			- Planned - Again, Test - Referral accepted
			- Planned - No Referral
			- Planned - Again, Test - Referral accepted
			- Planned - No Referral

Augustus Heller 28/02/1996

HCID: HC000238, IHI: 8003 6080 0001 2245

Care Plan created: 14/05/2015 - Last updated: 16/05/2015 08:33 by test again

Measurement	28/02/2015	29/04/2014	02/03/2014	02/05/2015
Blood Pressure	130 / 80		130 / 70	
Body Mass Index	29.4 kg/m <sup>2</sup>	29.4 kg/m <sup>2</sup>		
eGFR				76.00 *
QFR (Cockcroft-Gault)				
HbA1c				
HDL				
Height	175.00 cm	175.00 cm		
LDL				
Total Cholesterol				4.55 mmol/L
Triglycerides				1.30 mmol/L
Waist Circumference	102.00 cm			
Weight	90.10 kg	90.00 kg		

### Clinical Metrics



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www.wentwest.com.au

Powered by multiprac and ocean

Multiprac GP V1.0 ConnectedGP v2.0.01.0. Publisher

# CONNECT IN ONE PLACE



- Appointment reminders
- Medication reminders
- Feedback
- Fulfil prescriptions
- Receive education
- Enhanced control



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# CONNECT WITH HEALTHCARE PROVIDERS

- All the patient's healthcare needs are coordinated in one place
- Patients can co-ordinate appointments with GPs and allied health providers
- GPs can monitor from desktop, complimenting face to face visits
- GPs and clinicians co-ordinate care through shared data



# CONTENT DEVELOPMENT PLAN

## ONE LINERS

- Error, Pop-up, Toast, Tips, Push Notification
- Prompts guided by management algorithms
- Immediate action
- Inactivity, Follow-up, Reminders

## POP-UP DIABETES EDUCATION VIDEOS

- Educator, Podiatrist, Dietician, Exercise Physiologist, Psychologist
- Other patients

## LIBRARY

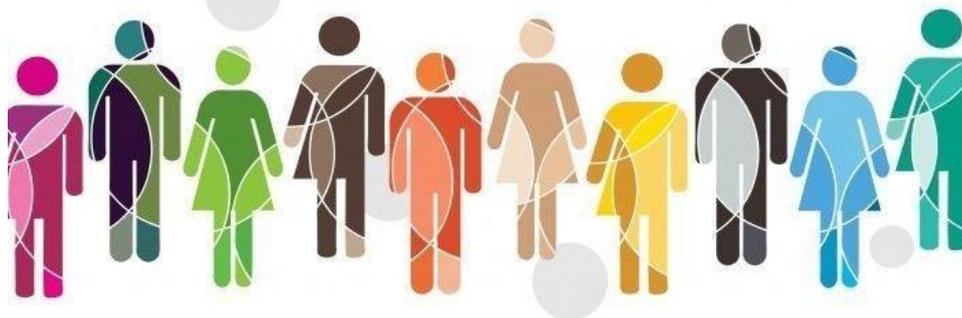
- Long-form articles
- Fact sheets
- Longer videos
- Tools & other links



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# HEALTH LITERACY

Effective  
Patient Self-  
management



Diabetes  
Education

Professor Kirsten McCaffery is a behavioural scientist at the School of Public Health at the University of Sydney Medical School. She has a national and international reputation for her psychosocial research in the fields of Screening, Shared Decision Making and Health Literacy

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# EXPECTED OUTCOMES



- Sharing care plans and providing better connection to the healthcare system
- Keeping information in one place
- Motivating self management
- Providing targeted prompts and education
- Increasing adherence with medication
- Making specialised diabetes education available to everyone
- Obtaining patient consent for data capture and evaluation
- Accumulating real world clinical evidence



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# ROLE OF PARTNERS



Oversee the development



(Provision of App core platform, web services and mobile app, including all functional components)



Provide Linked EHR interface with GP and Allied Health and General Practice support, HealthPathways



Diabetes expertise, education, HealthPathways, evaluation, research and promotion



Peak body and convening entity for private sector, diabetes education, and promotion



Leading Industry Partners supporting content development



Sydney University supporting behavioural content



University of Wollongong supporting evaluation

# BUSINESS MODEL CHANGED



HEALTH

Management  
Change

- Implementation team replaced
- New Executive management team

Relationship  
Change

- From: A partnership venture
- To: WSD becoming a billable client

Price Change

- From: A shared risk in development
- To: A client billing arrangement



Journey 1 – the Gateway app

# NSW HEALTH SHARE GOES TO TENDER

Key objective is to preserve the partnership and replace the IT Partner with a new platform

- Process takes almost 12 months
- 17 companies world wide responded – some with mature apps developed and in the market and others offering to build a new app to specifications
- We are looking for a partnership arrangement rather than a client relationship
- The business plan will be clear from the onset – no more surprises
- We are in final selection and negotiating phase



# WHAT ARE THE FUTURE DISRUPTORS?

- ❑ Technology is advancing rapidly



Apple Watch announces new features for diabetes management linked to Dexcom's G5 CGM

- ❑ **A Health Personal Assistant** (Siri like) using AI may altogether replace apps and aggregate information in new ways directly from multiple sources on the web



What of the future

# ACKNOWLEDGEMENT

Danny O'Connor, CE WSLHD

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Sumathy Ravi, Program Manager, WSD, IH, WSLHD

Jennifer Gaetz, Diabetes NSW

Adrian Zanetic, Diabetes NSW

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Vassi Krekas, Medical Manager Metabolic Disorders Sanofi

Sof Andrikopoulos, CE Australian Diabetes Society

Natalie Wischer, CEO National Association of Diabetes Centres

Ted Hartley, Consumer Representative WSD, IH, WSLHD

Jonathan Otero, Administration Officer, WSD, IH, WSLHD

Sam Frety, Manager, Central Procurement Unit, Supply Chain, WSLHD

