



Deepening understanding on pharmacy practice through experiencing virtual reality and mobile-health patient application

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Outline

- Background: pharmacy in Hong Kong.
- Pharmacy course: preparing pharmacy students for internship through immersive virtual reality.
- Developing mobile applications to connect medication users in the community.

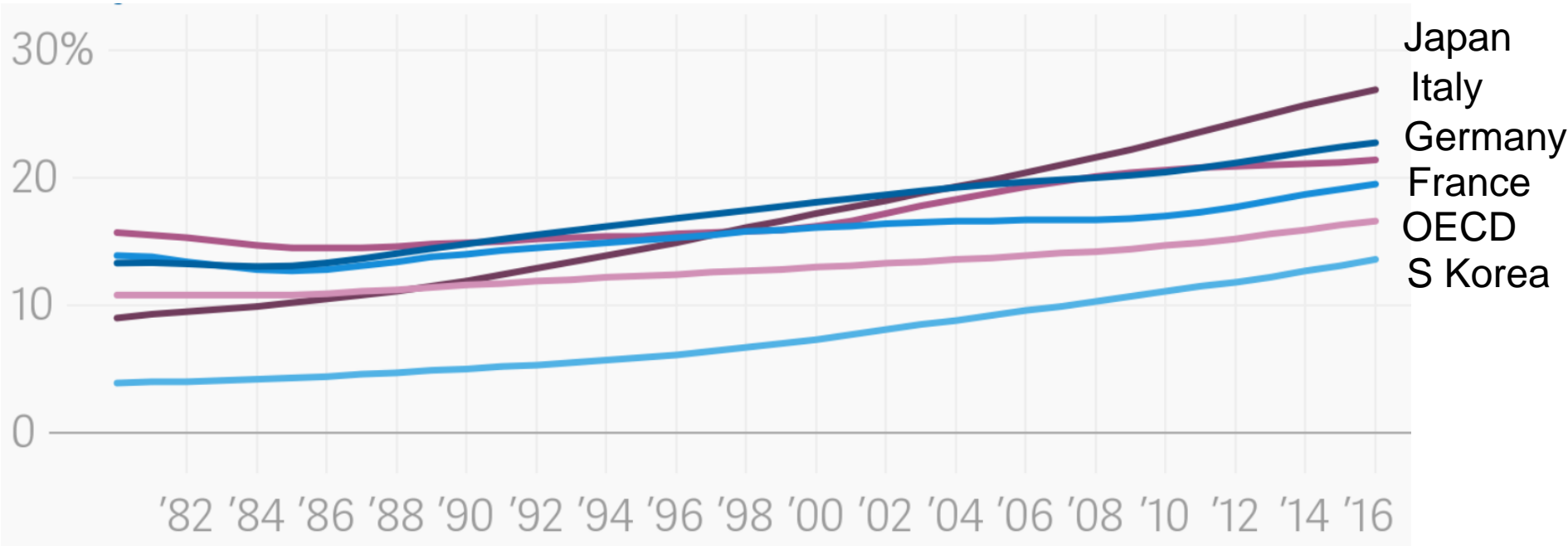




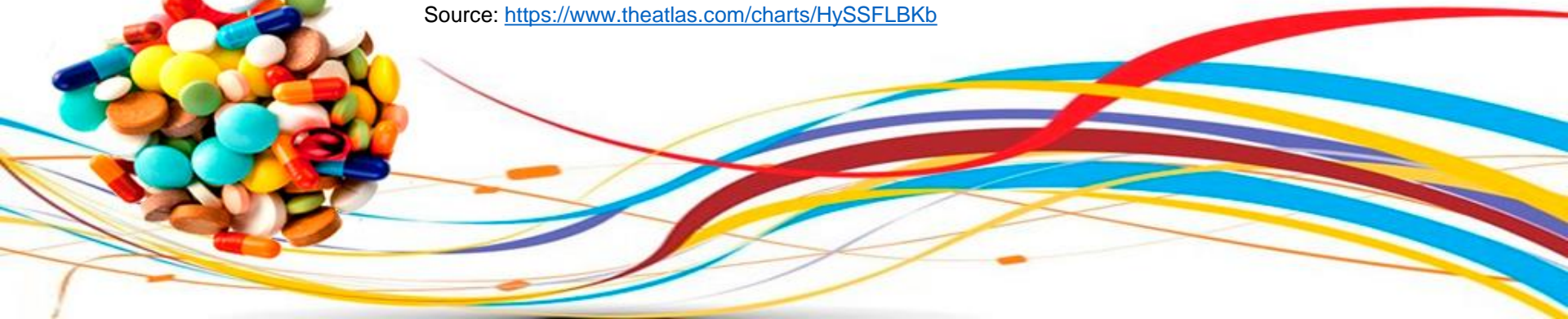
University campus



Over-65s as a % of total population



Source: <https://www.theatlantic.com/charts/HySSFLBKb>

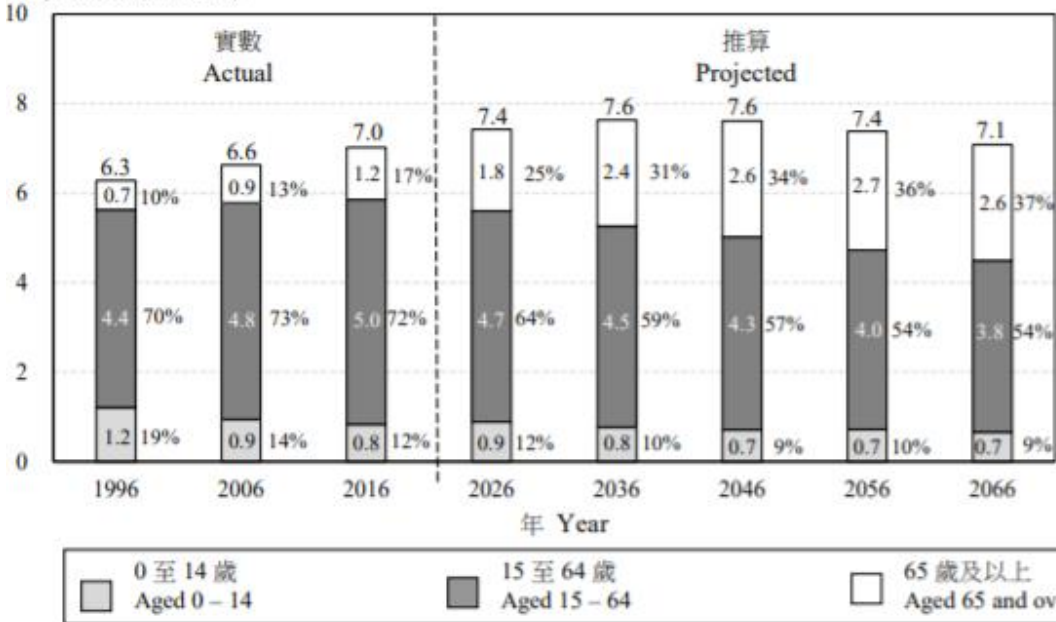


Hong Kong population projections for 2017 to 2066

Population size and age structure (excluding foreign domestic helpers)

人口 (百萬人)

Population (millions)



Source: <https://www.censtatd.gov.hk/hkstat/sub/sp190.jsp?productCode=FA100061>

By 2020, people over age 65 will outnumber children under age 5.



Registered healthcare professionals in Hong Kong (end 2017)

Type of Professional	Total	Healthcare Professionals to Population*
Doctors	14 290	1 : 519
Chinese medicine practitioners		
Registered Chinese medicine practitioners	7 425	1 : 998
Chinese medicine practitioners with limited registration	38	—
Listed Chinese medicine practitioners	2 623	1 : 2 825
Dentists	2 500	1 : 2 964
Dental hygienists	443	1 : 16 734
Nurses	54 231	1 : 137
Midwives	4 611	1 : 1 607
Pharmacists	2 753	1 : 2 692
Medical laboratory technologists	3 567	1 : 2 077
Occupational therapists	2 070	1 : 3 580
Physiotherapists	3 091	1 : 2 397
Optometrists	2 198	1 : 3 371
Radiographers	2 293	1 : 3 231
Chiropractors	218	1 : 33 990





Pharmacist working
in a public hospital
in Hong Kong

Source: Oriental Daily News



Source: Oriental Daily News



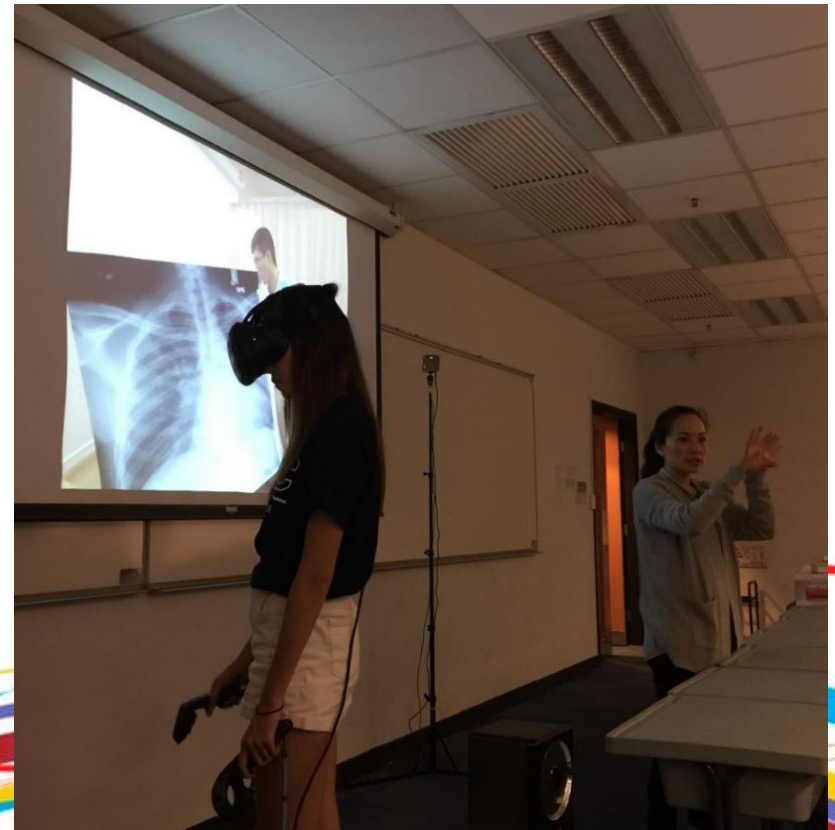
Pharmacology and therapeutics: preparation for internship



University versus hospital setting

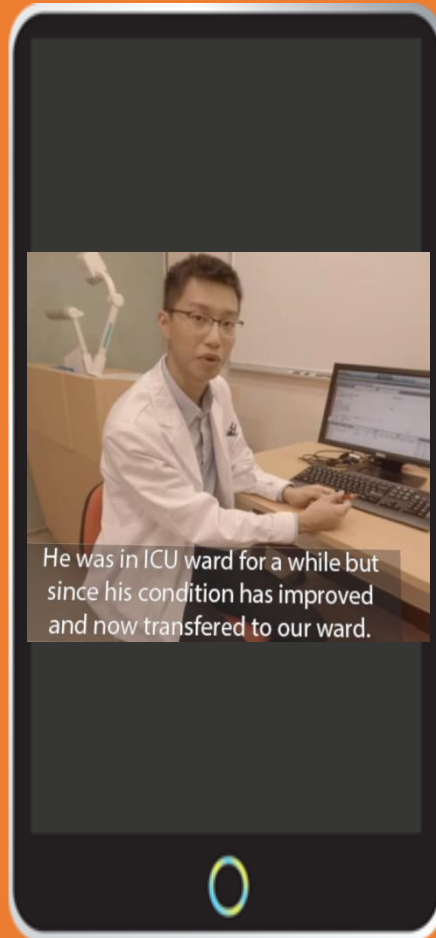


From classroom to **VR/IVR**



Learning through immersive and non-immersive virtual reality

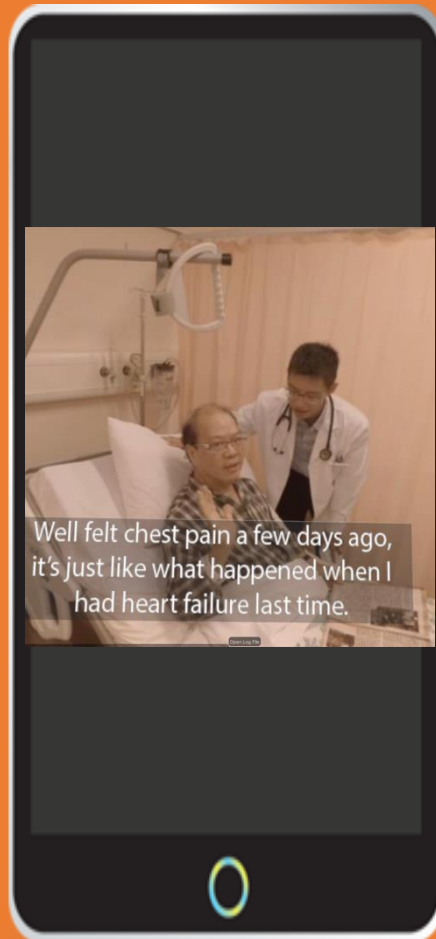
Talking to a doctor?



Credit: <https://www.edx.org/sites/default/files/course/image/promoted/course3-378x225.jpg>

Learning through immersive and non-immersive virtual reality

Talking to a patient?

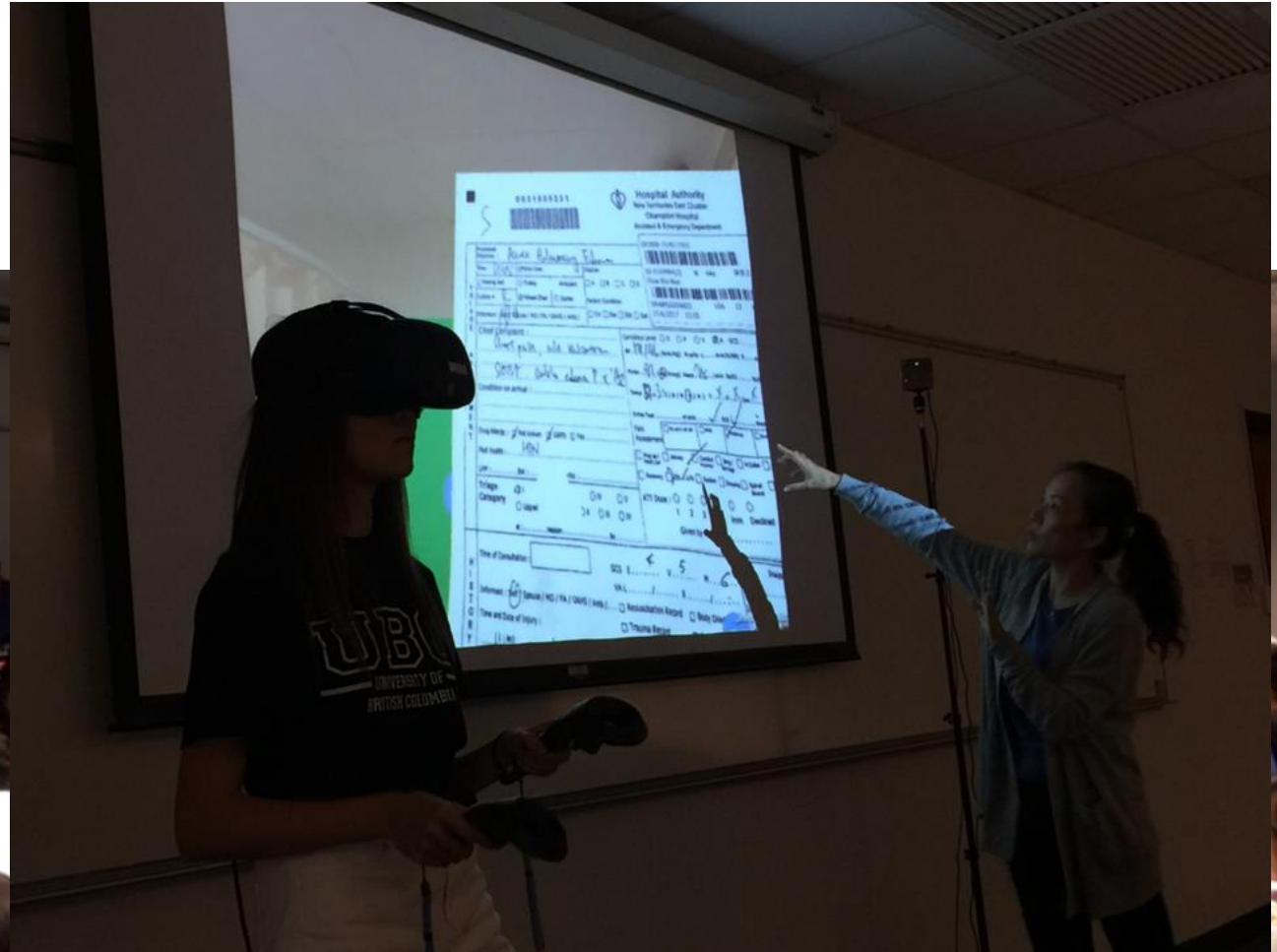


Credit <https://www.edx.org/sites/default/files/course/image/promoted/course-376x226.jpg>

During class



During class



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Hong Kong

25pc of patients don't take prescribed medication, survey finds



Elizabeth Cheung

Published: 3:35am, 19 Nov, 2014

Fearing the
possible side
effects...



Source: <https://www.scmp.com/news/hong-kong/article/1643249/25pc-patients-dont-take-prescribed-medication-survey-finds>



✉ drugs@cuhk.edu.hk |

☎ Admin 行政: (852) 3943 3798. For drug enquiry, please use 'Ask My Pharmacist' function. 藥物問題請透過“問藥劑師”功能查詢。



Menu



ASK MY PHARMACIST

Welcome to the AMPOULE enquiry system. You must accept the terms in our disclaimer in [...]

[Read More](#)



MEET MY PHARMACIST

Make an Appointment for Web Conference Events Every ampoule member can make an appointment to [...]

[Read More](#)



DRUGS Q&A

Q1: Will Atenolol's different production companies be the same ingredients and utility? Q2: Elders have tried to [...]

[Read More](#)

What's New

Welcome to AMPOULE! AMPOULE is launching a series of health-related theme pages written by registered pharmacists. We hope that the public could acquire professional and trustworthy health information from these pages. The first brand new page about 'Rheumatic disease' is now launched!

Ampoule, a web platform to ask questions of pharmacists

<http://www.ampoule.org.hk/>

Arranging web conferencing through the computer

Admin 行政: (852) 3943 3798. For drug enquiry, please use 'Ask My Pharmacist' function. 藥物問題請透過"問藥劑師"功能查詢。



Menu



Meet My Pharmacist

Make an Appointment for Web Conference Events

Every ampoule member can make an appointment to the ampoule admin for the Web Conference, the ampoule admin receive all the enquiry and come up with a date to hold the Web Conference, if you want to make an appointment, fill in the below form details and ampoule admin will contact you shortly. You can click the date to see the booking details.

* Any appointments for Web Conference Services should be made 1 day in advance.

* This function is currently under testing. Please look forward to it.

Search

Language

ENGLISH

中文



Having mobile phone to HELP



Ampoule



Development of mobile patient-health application

Engaging medication users in the community



Technology can help to provide more personalized healthcare offerings, including advice, guidance

6) Notification for appointment scheduled on 24/2 15:42 received on 23/2 17 Please check



7) The user is confuse when they could get the notification. Is it possible to let the user can set when should the app remind him about the appointment.

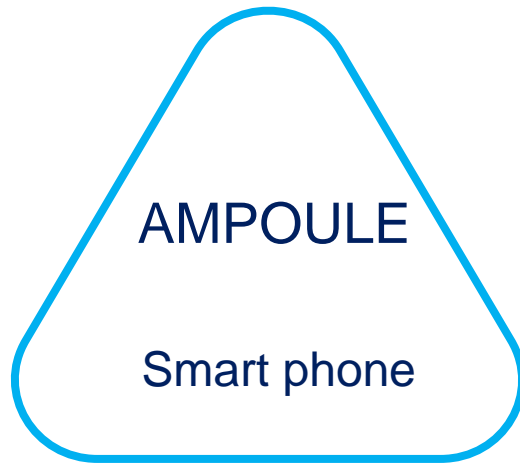
Out of scope

8) Sometimes when we press the button "Go" there is no res

It works, jump to next field when



App development [testing with pharmacist and students]

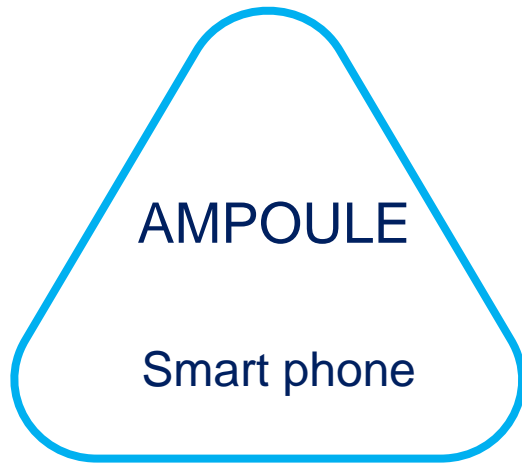


FUNCTION:

Reminder of drug taking:

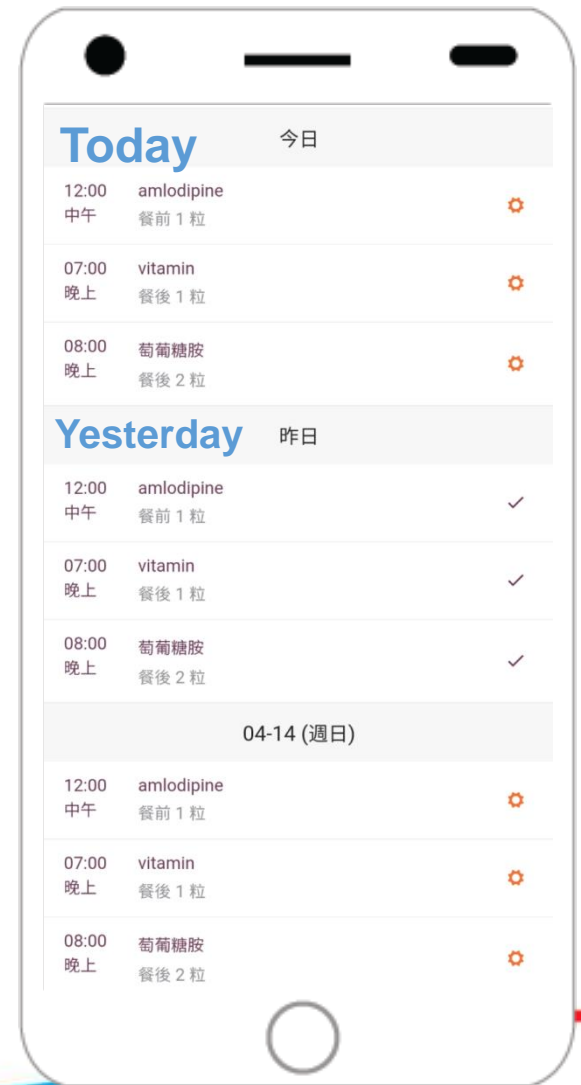
(1) *Alarm*, which refers to the mobile device providing an audio alert at a preset time , (2) *Push Notification*, which is an internal message appearing on the mobile device at a set time indicating the need to take medication.

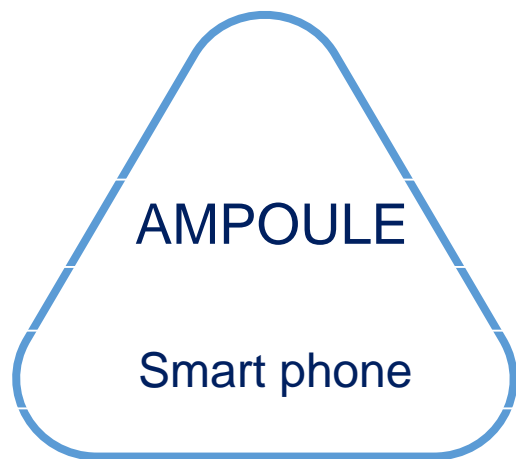




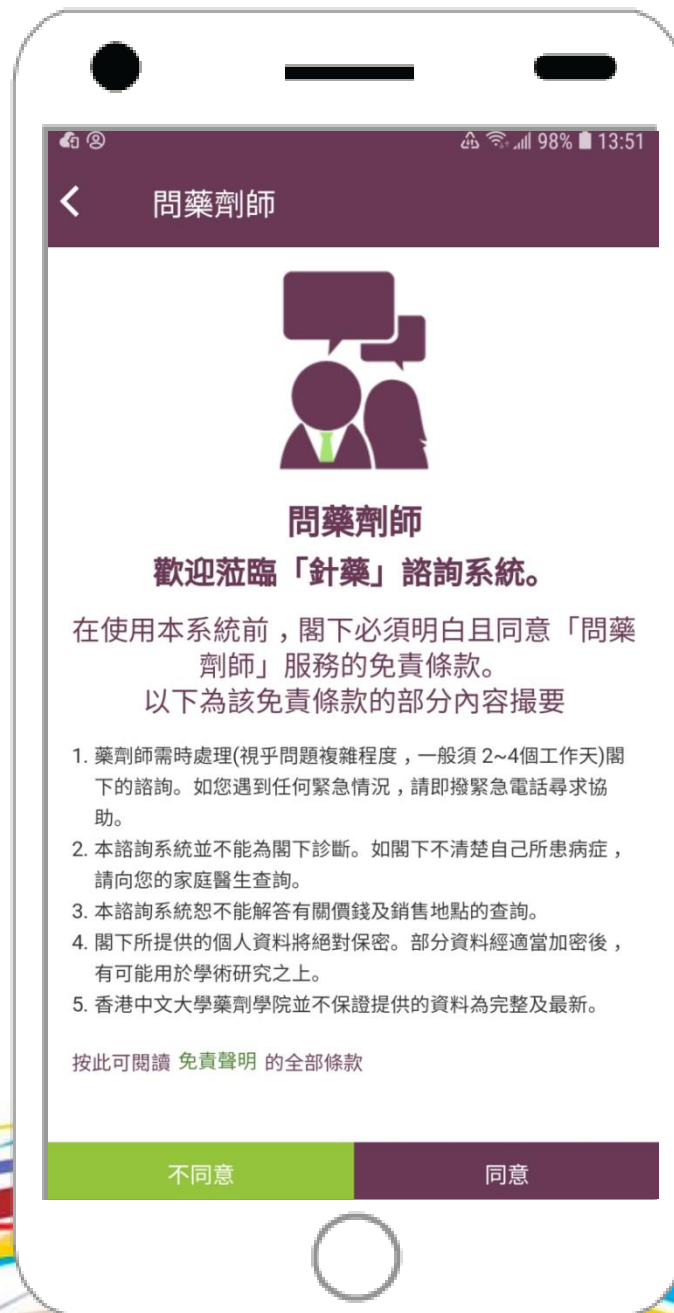
Tracking of drug taking:

(1) *Alarm*, which refers to the mobile device providing an audio alert at a preset time , (2) *Push Notification*, which is an internal message appearing on the mobile device at a set time indicating the need to take medication; (3) **Personal Tracking**: capacity of the app to allow users to track their medication taking and create a record of it.





FUNCTION:
Ask a pharmacist

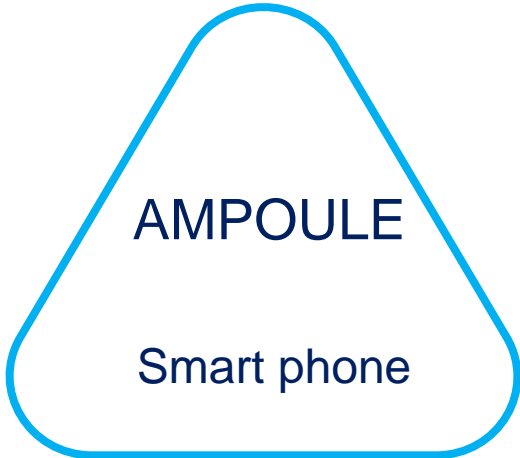




Miss the next
appointment?

Source: <https://www.nytimes.com/guides/well/make-the-most-of-your-doctor-appointment>





FUNCTION:

Add next appointment and reminder



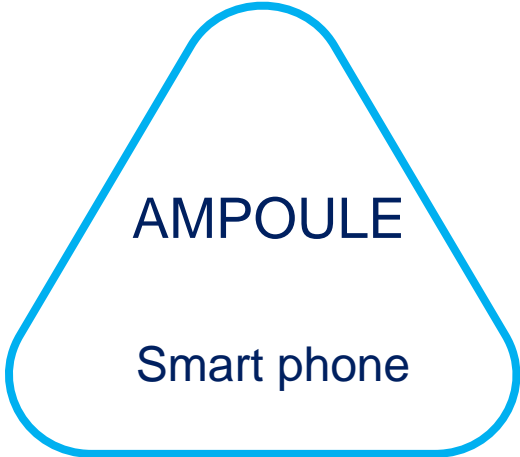
AMPOULE

Smart phone

FUNCTION:

CARER receiving
reminder
of next appointment





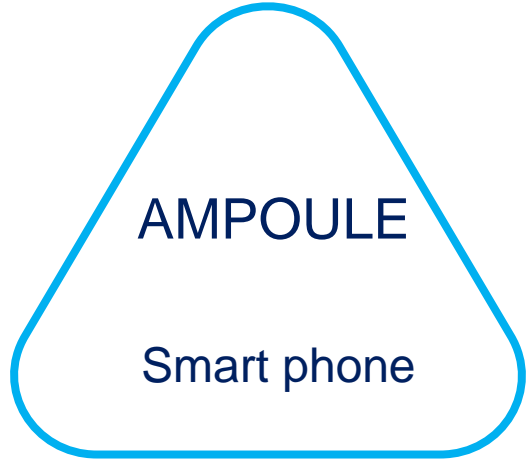
FUNCTION:
Add new drug
specifying when to take what



side-effects?



Source: <http://www.iamtoday.wordpress.com/2019/01/21/from-medicine-appointment-to-new-medication/>



FUNCTION:
New drug list



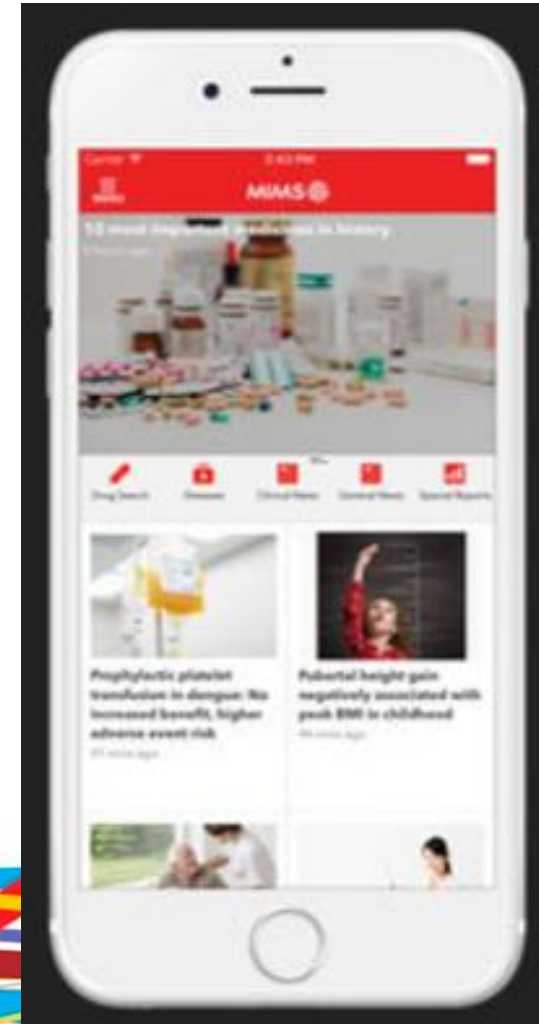
Source: <https://www.rheumatology.org/I-Am-A/Patient-Caregiver/Treatments/Drugs/Oral-Disease/>



Study: enhancing pharmacy student learning and perceptions of medical apps



Rodis, J., Aungst, T. D., Brown, N. V., Cui, Y., & Tam, L. (2016). Enhancing pharmacy student learning and perceptions of medical apps. *JMIR mHealth and uHealth*, 4(2), e55.



Studies

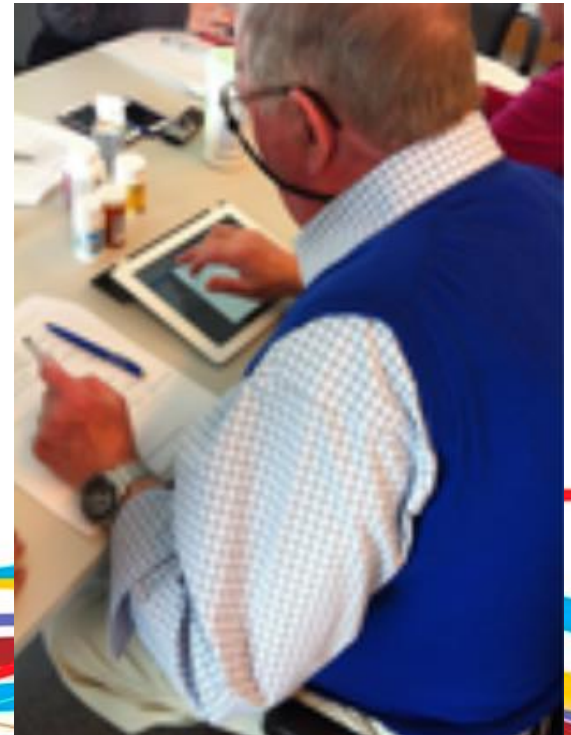
Health Information–Seeking Behavior of Seniors Who Use the Internet: A Survey

Medlock, S., Eslami, S., Askari, M., Arts, D. L., Sent, D., de Rooij, S. E., and Abu-Hanna, A. (2015). Health information–seeking behavior of seniors who use the internet: a survey. *Journal of medical Internet research*, 17(1), e10.



Evaluating User Perceptions of Mobile Medication Management Applications With Older Adults: A Usability Study

Grindrod, K. A., Li, M., and Gates, A. (2014). Evaluating user perceptions of mobile medication management applications with older adults: a usability study. *JMIR mHealth and uHealth*, 2(1), e11.

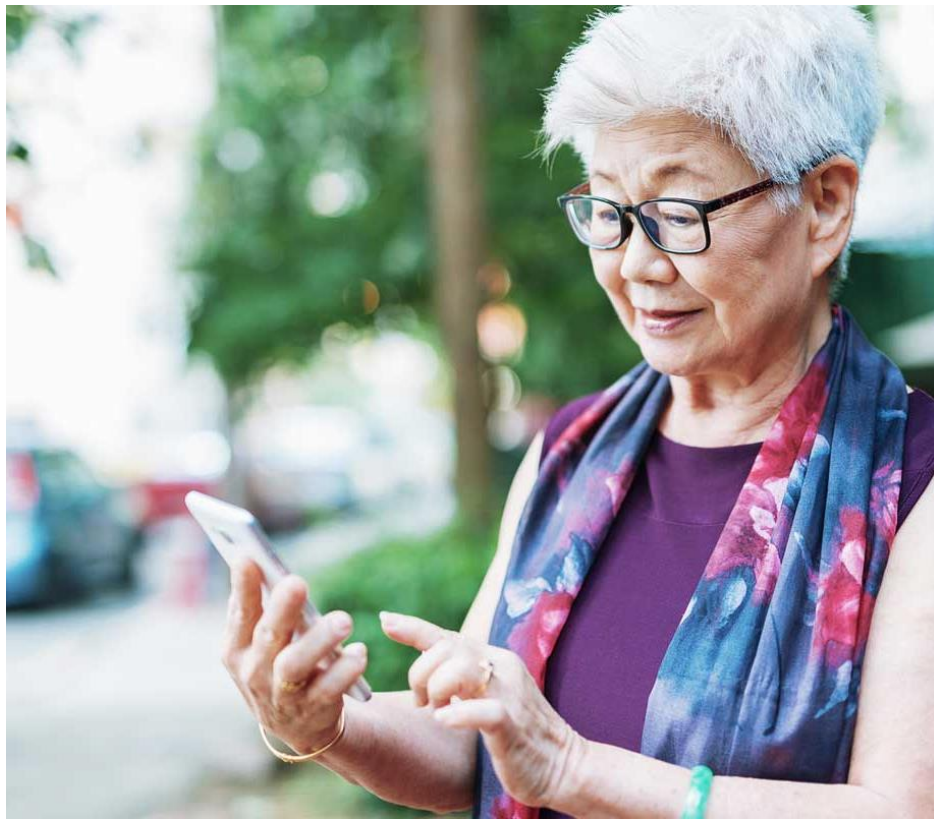


Study:

Pharmacy customers' experiences with electronic prescriptions: cross-sectional survey on nationwide implementation in Finland

Lämsä, E., Timonen, J., & Ahonen, R. (2018). Pharmacy Customers' Experiences With Electronic Prescriptions: Cross-Sectional Survey on Nationwide Implementation in Finland. *Journal of medical Internet research*, 20(2), e68.





Elderly
learning to use
mobile phone

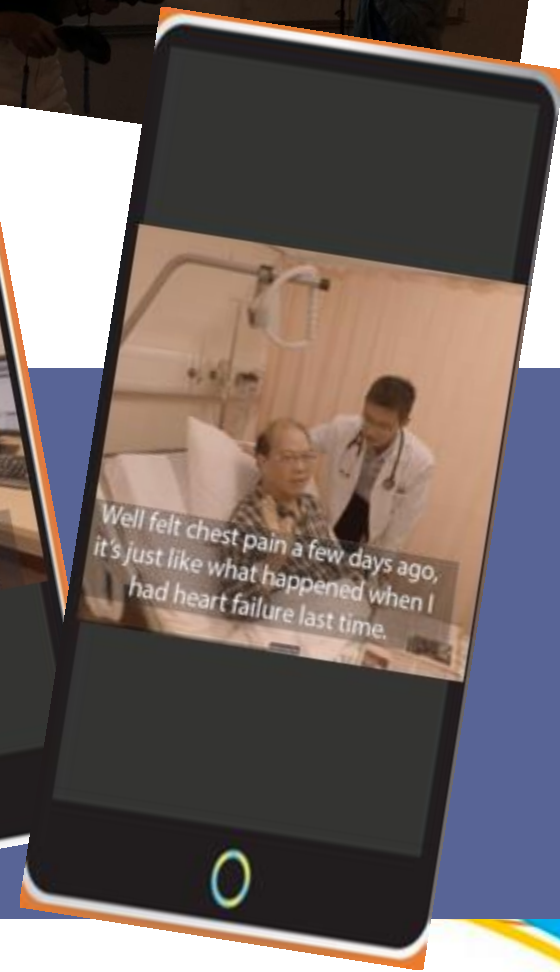
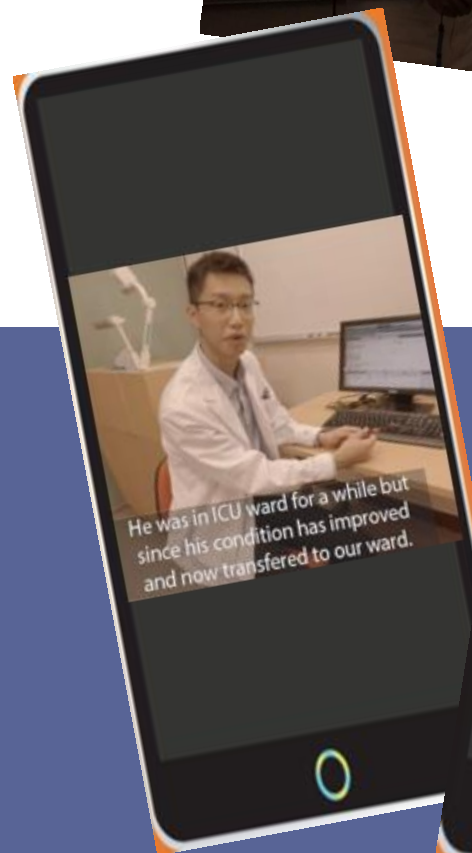
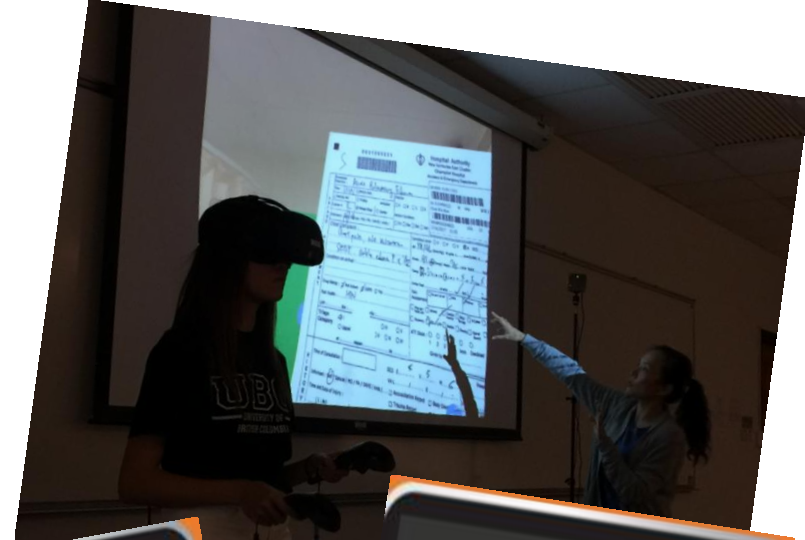
Credit: <https://www.aginginplace.org/cellphone-guide-for-seniors/>

Patient engagement
with own health



Pharmacy education

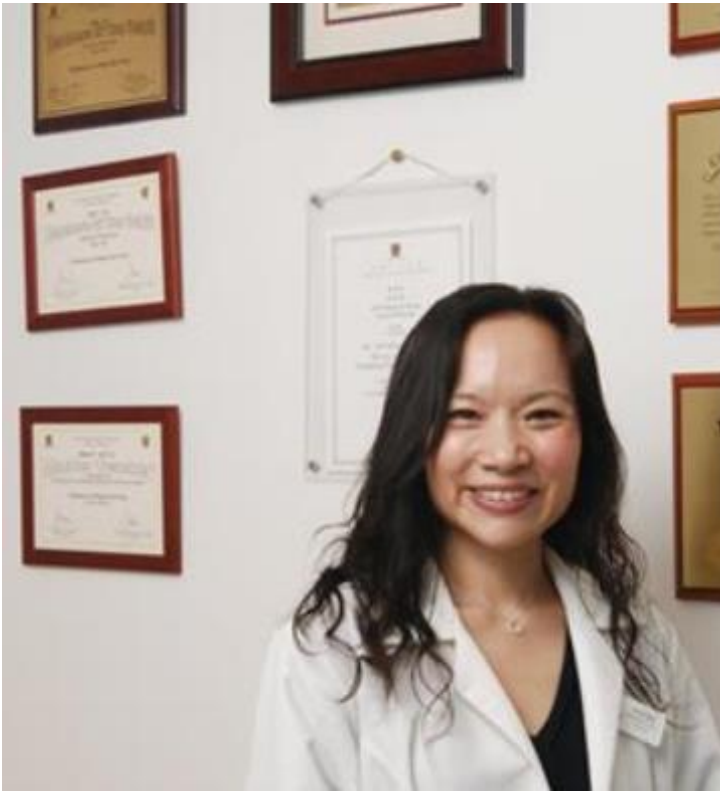
Connecting clinical practice and communities



Conclusion

Using a range of technologies, future pharmacists may be able to experience a sustainable approach to providing patient-centred care when patients are admitted to a hospital and know the possibility of connecting them and other medication users in the mobile apps in the growing aging population in Hong Kong.





**Prof. Lee Wing-yan, Vivian, recipient
of the University Education Award**



Acknowledgement

- Production of virtual reality: The Teaching Development and Language Enhancement Grants 2016-2019, CUHK
- Production of app: University Grants Committee Teaching and Learning-related Projects in the 2016-19 triennium



Q&A

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