

Journal Club of the Food and Health Bureau

Interprofessional Collaboration for Health Promotion

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學能提升研究中心
Centre for Learning Enhancement And Research

Outlines

- In the next 20 minutes, the following 3 areas will be focused:
 1. Interprofessional education
 2. Translation impact of current interprofessional practice and
 3. Future direction of interprofessional teamwork in healthcare.

Over a decade ago....



Geriatrics
Gerontology
INTERNATIONAL

Medline Indexed

Geriatr Gerontol Int 2013; **13**: 978–985

ORIGINAL ARTICLE: EPIDEMIOLOGY,
CLINICAL PRACTICE AND HEALTH

Medication adherence: Is it a hidden drug-related problem in hidden elderly?

Vivian WY Lee,¹ Kathy KW Pang,¹ Ka Chun Hui,¹ Jennifer CK Kwok,¹ Siu Ling Leung,¹
Doris Sau Fung Yu² and Diana Tze Fan Lee²

¹School of Pharmacy, and ²The Nethersole School of Nursing, Faculty of Medicine, The Chinese University of Hong Kong, Hong Kong

Health Care and Promotion Fund, Food and Health Bureau, HKSAR April 2009.
(Project No. 22080564). Joint Nursing-Pharmacy Health Promotion
Programme for Hidden Elders in the Community.

Excellent Health Promotion Project Award, 2015

The 10th Health Medical Research Fund (HMRF) Anniversary Award, 2021



- Community Health And Multidisciplinary Partnership Inter-professional Outreach Network
- Multi-disciplinary outreach team and service-learning program
- Students, teachers, and alumni of Faculty of Medicine, CUHK



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Logistic of Outreach Services



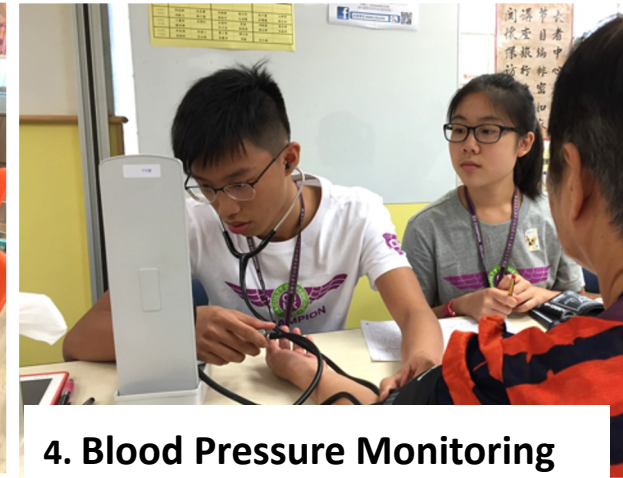
1. Registration



2. Body Mass Index



3. Health Questionnaire



4. Blood Pressure Monitoring

- Our major event every year
- City-wide health service for elderly
- Students apply health knowledge from workshop and e-learning



8. Health / Drug Consultation



7. Health Summary



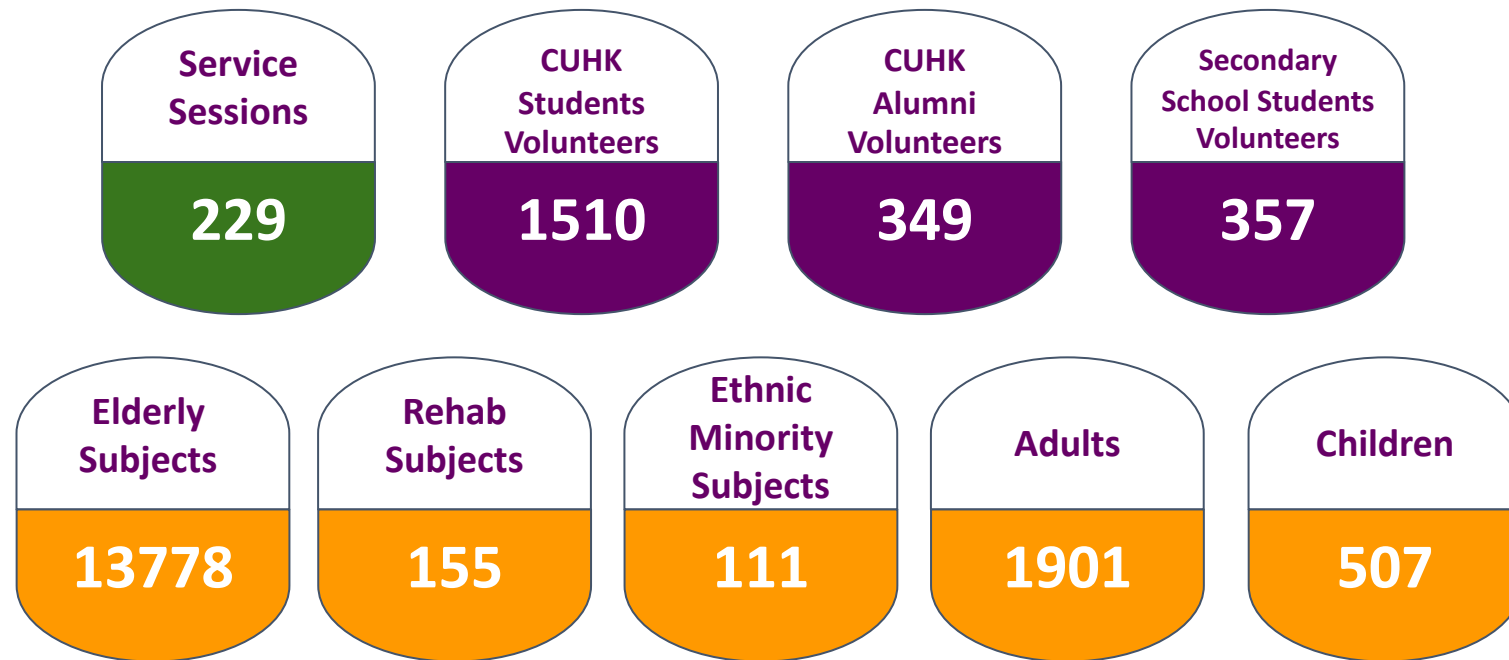
6. Blood Glucose Monitoring



5. Electrocardiogram Monitoring

CU CHAMPION

Impact since 2013



Updated on 6 Oct, 2018



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2018

CUHK Student Volunteers



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- **Real world service-learning activities** are essential in interprofessional education.
- Helpful for the growth of healthcare students and the development of **high quality patient care** in the long run.





- In parallel with providing health service, students can also learn **valuable real-world experience** from patients and understand their needs. On the other hand, collaborating with peers from other healthcare professions can also **broaden their prospective in patient care.**

For more information
about our IPE projects,
please visit
www.cuchampion.com



Inter-professional Learning for Medication Safety



About CU CHAMPION

Each year, CU CHAMPION hosts a series of community outreach services to benefit general public and elderly population in Hong Kong in order to enhance their understanding of disease prevention and medication safety, and also brings CUHK students together to serve.

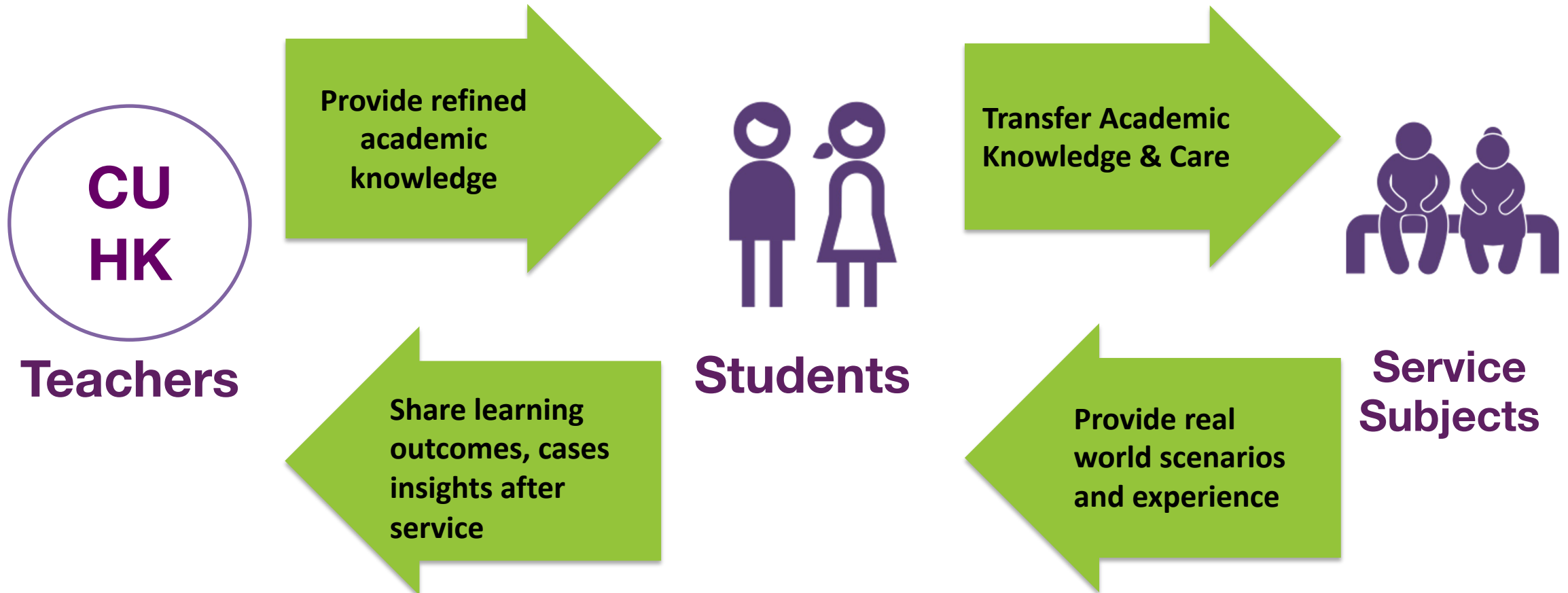


Translational Impact of IPE



**Evaluation of
Effectiveness of Knowledge Transfer of
Antimicrobial Resistance (AMR)
to Hong Kong Elderly:
a Quasi Experiment**

Interprofessional Service-learning in CU CHAMPION

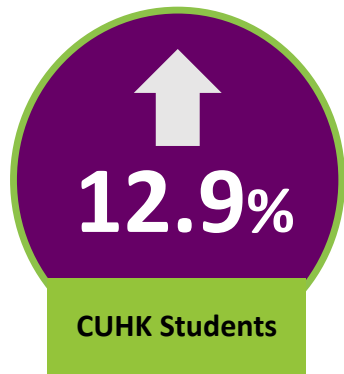


Impact on Students' Learning

Percentage change in **Self-Rated** Knowledge Level
Among University and High-school student volunteers

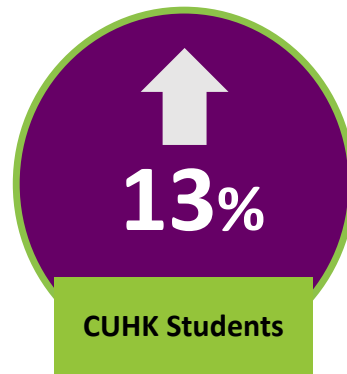
Valid response from Pre and Post self
evaluation :
University students (n = 88)

Understanding
Elderly's Needs



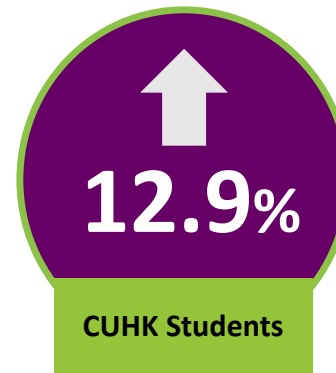
Significant improvement
($p < 0.001$)

Understanding of
Antimicrobial Resistance



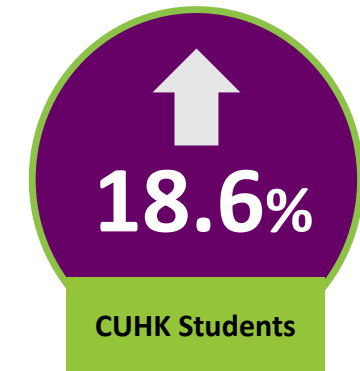
Significant improvement
($p < 0.001$)

Medication
Safety



Significant improvement
($p < 0.001$)

Geriatric
Care



Significant improvement
($p < 0.001$)

Selection of Elderly Subjects

Around 1600 elders from 36 elderly centres were **reached** through CU CHAMPION of CUHK

Subjects were **screened** according to the inclusion and exclusion criteria

10-12 subjects were invited from each of the centers that agreed to work on the project; the subjects were assigned a number and **selected** randomly with the use of an online randomizer

The subjects were then **allocated** to either intervention or control group with a 2:1 allocation ratio.

Inclusion criteria

- Hong Kong elderly aged 65 or above
- able to communicate in Cantonese

Exclusion criteria

- memory impairment screening (MIS) score of 4 or below
- diagnosed with dementia



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Instrument

- questionnaire adapted from WHO survey and DH survey^{1, 2}
- 5 true or false questions on knowledge on the use of antibiotics
- 6 true or false questions on knowledge about AMR
- Pre-tests: conducted right before the implementation of intervention
- Post-tests: conducted one week after the education intervention

| 中心代碼 | 參加者號碼 | 參加者英文姓名 | 參加者中文姓名 | 身份證出生年份 |
|------|-------|---------|---------|---------|
| | | | | |

I. 基本資料

| | | | | |
|----------|------------------------------|-----------------------------|-----------------------------|------------------------------|
| 1. 性別： | <input type="radio"/> 男 | <input type="radio"/> 女 | | |
| 2. 年齡： | <input type="radio"/> 65-74 | <input type="radio"/> 75-84 | <input type="radio"/> 85-94 | <input type="radio"/> 95 或以上 |
| 3. 教育程度： | <input type="radio"/> 從未接受教育 | <input type="radio"/> 小學 | <input type="radio"/> 中學 | <input type="radio"/> 大專或以上 |

II. 關於抗生素的認知

| | | | |
|---|--------------------------|--------------------------|---------------------------|
| 如有傷風感冒徵狀，可以以抗生素醫治。 | <input type="radio"/> 正確 | <input type="radio"/> 錯誤 | <input type="radio"/> 不知道 |
| 抗生素可以殺滅細菌。 | <input type="radio"/> 正確 | <input type="radio"/> 錯誤 | <input type="radio"/> 不知道 |
| 可以向朋友或家人取得抗生素以醫治相同的疾病。 | <input type="radio"/> 正確 | <input type="radio"/> 錯誤 | <input type="radio"/> 不知道 |
| 以前生病時曾使用某款抗生素而康復，假如再患上同一疾病，可以購買或向醫生要求該款抗生素醫治。 | <input type="radio"/> 正確 | <input type="radio"/> 錯誤 | <input type="radio"/> 不知道 |
| 當病情好轉時，可自行中斷抗生素療程。 | <input type="radio"/> 正確 | <input type="radio"/> 錯誤 | <input type="radio"/> 不知道 |

III. 關於抗菌素耐藥性的認知

| | | | |
|-------------------------------------|--------------------------|--------------------------|---------------------------|
| 抗菌素耐藥性是指身體對抗菌素產生抗藥性，出現耐藥性，令抗菌素失去效用。 | <input type="radio"/> 正確 | <input type="radio"/> 錯誤 | <input type="radio"/> 不知道 |
| 對抗生素具有抗藥性的細菌會在人與人之間傳播。 | <input type="radio"/> 正確 | <input type="radio"/> 錯誤 | <input type="radio"/> 不知道 |
| 不恰當使用抗菌素會(加劇篩選出含耐藥基因的微生物)，導致抗菌素耐藥性。 | <input type="radio"/> 正確 | <input type="radio"/> 錯誤 | <input type="radio"/> 不知道 |
| 抗菌素耐藥感染會增加醫療的風險 (如外科手術、器官移植等)。 | <input type="radio"/> 正確 | <input type="radio"/> 錯誤 | <input type="radio"/> 不知道 |
| 只要我正確地服用抗菌素，我就不會受到抗菌素耐藥感染影響。 | <input type="radio"/> 正確 | <input type="radio"/> 錯誤 | <input type="radio"/> 不知道 |
| 保持手部衛生可以防止抗菌素耐藥性惡化。 | <input type="radio"/> 正確 | <input type="radio"/> 錯誤 | <input type="radio"/> 不知道 |

1. World Health Organization. (2015). Antibiotic Resistance: Multi-Country Public Awareness Survey. Retrieved from http://apps.who.int/iris/bitstream/handle/10665/194460/9789241509817_eng.pdf?sequence=1

2. Department of Health, HKSAR. (2017). General Public's Knowledge, Attitude and Practice Survey on Antimicrobial Resistance 2016/17. Retrieved from https://www.chp.gov.hk/files/pdf/kap_on_amr_main_report.pdf



Intervention

| | |
|---------------------------|---|
| Format | <ul style="list-style-type: none">• conducted individually• one-on-one |
| Time | <ul style="list-style-type: none">• within 15 minutes |
| Venue | <ul style="list-style-type: none">• Meeting rooms in district community centres |
| Investigator | <ul style="list-style-type: none">• carried out by final-year students from the School of Pharmacy, CUHK<ul style="list-style-type: none">• they are required to attend a 45 minutes lecture on AMR delivered by a pharmacist• read specific materials about AMR in order to be able to facilitate teaching in the study |
| Consent | <ul style="list-style-type: none">• Oral consent |
| Intervention group | <ul style="list-style-type: none">• 5-minute video session• 10-minute face to face verbal health education done by the investigation |
| Control group | <ul style="list-style-type: none">• received no intervention |

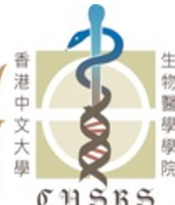
Comparison of intervention and control group

Mean change in scores at posttest for intervention and control groups

| | Intervention | Control | p-value | Effect size |
|---------------------------------|--------------|------------|---------|-------------|
| | Mean (SD) | | | |
| Change in antibiotics knowledge | 1.48 (1.5) | 0.41 (1.1) | <0.001 | 0.577 |
| Change in AMR knowledge | 3.34 (1.8) | 0.91 (1.2) | <0.001 | 1.19 |
| Total change | 4.75 (2.7) | 1.31 (2.8) | <0.001 | 1.25 |



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RESEARCH

Open Access



Impact of interprofessional service-learning on the effectiveness of knowledge transfer of antimicrobial resistance to Hong Kong elders: a quasi-experiment

Anna C. Y. Lo¹, Joyce T. S. Li², Janita P. C. Chau³, Samuel Y. S. Wong⁴, David S. C. Hui⁵ and Vivian W. Y. Lee^{2*} 



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2. Translational Impact of Interprofessional Collaboration

Selection of Articles

Comprehensive and explicit search through the databases PubMed, MEDLINE, and Embase.

Original research articles
– RCT, non-RCT,
longitudinal &
observational studies
Published between Jan
2000 to May 2021
Language: English

Included disease-related
terms (Cardiovascular,
stroke, cerebrovascular,
heart disease and
intervention-related
terms
(pharmacist, multidisciplinary,
prevention,
screening, program,
effectiveness).

Data extraction
was done
independently by four
reviewers and
discrepancies were
resolved by discussion.

Inclusion criteria

- (1) the study involved one or more interventions that aimed at preventing or managing cardiovascular diseases or cerebrovascular diseases;
- (2) the study involved pharmacist intervention, either as pharmacist-led intervention or as multidisciplinary team care including pharmacists;
- (3) the study measured at least one of the following outcomes: cardiovascular risk factors, cardiac events, cerebrovascular incidents, hospitalizations or readmissions, emergency room visits, mortality, medications adherence, medication adverse events, guideline adherence, quality of life, or cost-effectiveness

Exclusion criteria

- If they were study protocols, reviews, letters to the editor, editorials, commentaries, or abstracts.
- Studies that primarily compared the efficacy of specific medications or procedures instead of pharmacist intervention were excluded as well.

Cardiovascular & Cerebrovascular Diseases Prevention

| Authors (year) | Cohort population | Number of subjects | Study design | Intervention | Comparator | Results summary | Overall effect |
|-------------------------------|---------------------------------|--------------------|--------------|---|------------|---|----------------|
| Howard-Thompson et al. (2013) | T2DM | 206 | Cohort study | Pharmacist-physician collaboration to provide comprehensive diabetes management services based on mutually agreed goals | Nil | Reduced SBP (pre-intervention) 132.15 ± 17.98 vs (post-intervention) 126.97 ± 17.62 , $p < 0.001$. Reduced DBP (77.2 ± 11.70 vs 74.30 ± 11.59 , $p < 0.001$). Reduced TC (183.31 ± 55.62 vs 166.54 ± 48.16 , $p < 0.001$). Reduced LDL-C (100.45 ± 45.16 vs 89.13 ± 39.52 , $p < 0.001$). Reduced TG (230.99 ± 231.7 vs 190.93 ± 182.87 , $p = 0.0027$). | Positive |
| Carter et al. (2018) | Elevated CV risk | 302 | RCT | Medication reconciliation, patient counselling and education | Usual care | Improved guideline adherence (measurement by Guideline Advantage score) 5%, $p = 0.07$. | Positive |
| Rothman et al. (2005) | T2DM with poor glycemic control | 217 | RCT | Patient counselling and medication management | Usual care | Greater SBP reduction (-9mmHg , 95% CI -16 to -3). Greater DBP reduction (-5mmHg , 95% CI -9 to -1). Greater HbA1c reduction (-0.8% , 95% CI -1.7 to 0). | Positive |

Cardiovascular & Cerebrovascular Diseases Prevention

| Authors (year) | Cohort population | Number of subjects | Study design | Intervention | Comparator | Results summary | Overall effect |
|--------------------------|--------------------------|--------------------|--------------|---|------------|--|---|
| Gilani et al. (2013) | T2DM | 136 | RCT | Drug therapy optimization | Usual care | Increase in use of antiplatelet therapy at 1 year (RR 2.6, 95% CI 1.5-4.7). | Positive |
| Al Mazroui et al. (2009) | T2DM | 234 | RCT | Medication review, patient education | Usual care | Significantly reduced mean HbA1c, SBP, DBP in intervention group while no difference observed in control group. Reduced FRS in intervention group while unchanged in control group (no formal testing on the difference between groups). | Positive |
| Neto et al. (2011) | T2DM and/or hypertension | 194 | RCT | Medication review, non-adherence assessment, patient education | Usual care | Reduced SBP, DBP, fasting glucose, HbA1c, TG, LDL-C, TC, BMI, abdominal circumference, mean FRS and increased HDL-C in intervention group but not control group. | Positive |
| Villeneuve et al. (2010) | Dyslipidemia | 225 | RCT | Collaborative care by physician and pharmacist, pharmacist role: counselling, medication optimization | Usual care | No significant reduction in LDL-C after adjustment, more subjects achieving lipid goal in intervention group (adjusted RR 1.16, 95% CI 1.01-1.34). | Goal attainment: positive; biochemical lab: neutral |

Cardiovascular & Cerebrovascular Diseases Management

| Authors (year) | Cohort population | Number of subjects | Study design | Intervention | Comparator | Results summary | Overall effect |
|----------------------|---|--------------------|---------------------------|---|------------|--|----------------|
| Ho et al. (2014) | ACS | 253 | RCT | Medication reconciliation, patient education, collaborative care with physicians, voice messaging. | usual care | Higher proportion of patients being adherent: 89.3% in IG vs 73.9% in CG; $p = 0.003$. Higher mean PDC for statins, ACEI/ARB, clopidogrel, and β -blockers: 0.94 in IG vs 0.87 in CG; $p < 0.001$. | Positive |
| Bailey et al. (2007) | Hospitalized patients with elevated troponin I levels | 895 | RCT | Pharmacist received computerized alerts identifying hospitalized patients with elevated troponin I levels and advised physicians on the drug therapy. | usual care | Higher proportion of patients discharged on secondary prevention medications: 83.6% in IG vs 70.3% in UC; $p < 0.001$. Higher proportion of patients discharged on ACEI: 89.9% in IG vs 83.8% in UC; $p = 0.02$ and statins: 94.2% vs 89.3%; $p = 0.02$. No significant difference on coverage of BB: 95.9% in IG vs 91.8% in UC; $p = 0.10$ and aspirin: 96.4% in IG vs 96.5% in UC; $p = 0.87$. | Positive |
| Kang et al. (2008) | ACS | 79 | Quasi-experimental design | Multidisciplinary team with pharmacist (Medication reconciliation, medication optimization, transition of care service) | usual care | No significant differences in prescription rates of ACEI, ARB, BB. Fewer ER visits: 4 in IG vs 12 in CG; $p = 0.016$. No significant difference in mortality rate and readmission rate. | Neutral |

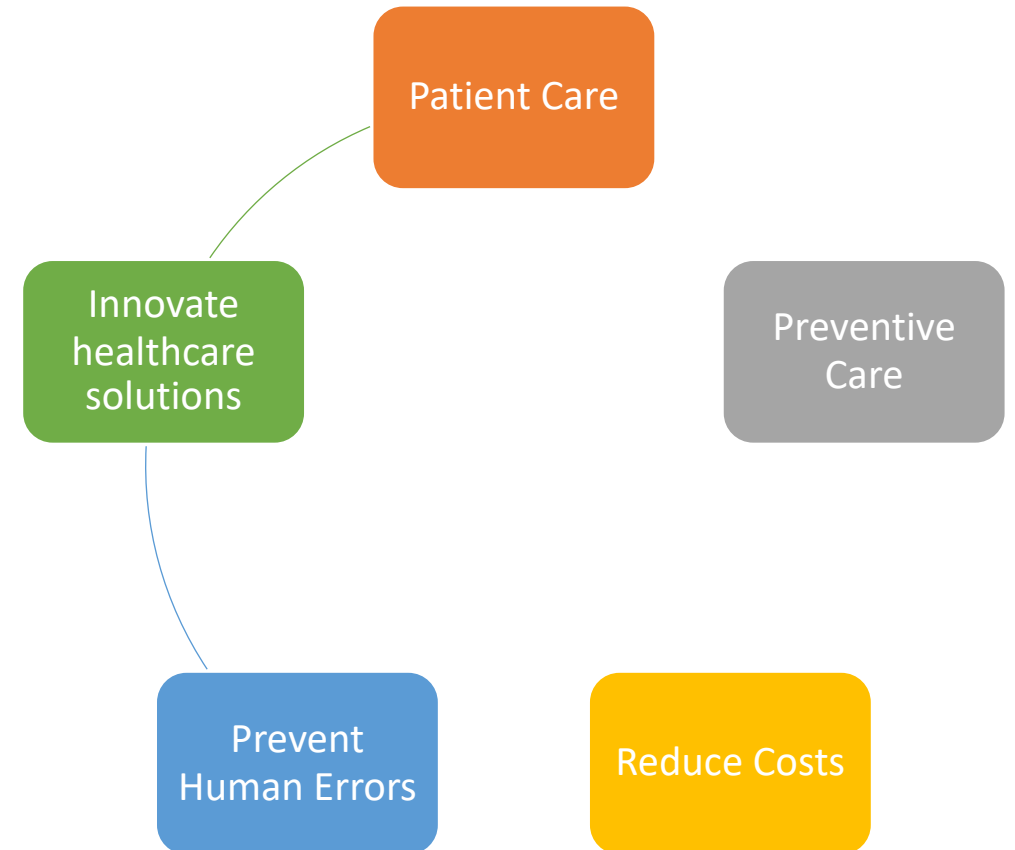
Cardiovascular & Cerebrovascular Diseases Management

| Authors (year) | Cohort population | Number of subjects | Study design | Intervention | Comparator | Results summary | Overall effect |
|-----------------------|--|--------------------|--------------|--|---|---|----------------|
| Tsuyuki et al. (2002) | ASCVD (MI, unstable angina, stable angina, coronary revascularization, or cerebral or peripheral vascular disease), DM and at least 1 other cardiovascular risk factor | 675 | RCT | Patient education, cholesterol measurement, referral to physician, regular follow-up | usual care + education brochure and general advice, minimal follow-up | Improvement in cholesterol risk management (measurement of a complete fasting cholesterol panel by the primary care physician or prescription of a new cholesterol-lowering medication or an increase in dosage of a cholesterol-lowering medication) was reached in 196 patients (57%) in IG vs 102 (31%) in CG (unadjusted OR, 3.0; 95% CI, 2.2-4.1; p<0.001) | Positive |
| Hogg et al. (2009) | DM, CAD, HF, COPD | 241 | RCT | Collaborative team care composed of their physicians, 1 of 3 nurse practitioners, and a pharmacist. | usual care by family physician | Improved Chronic Disease Management Quality of Care in IG by 9.2%; p<0.001, improved preventive care by 16.5%; p<0.001. | Positive |
| Hohmann et al. (2014) | Stroke | 310 | RCT | Pharmacist provided detailed information on patients' medications in the discharge letter drafted by neurologist for primary care physician. | Discharge letter written by neurologist only | Higher adherence to the entire regimen: 90.0% in IG vs 83.3% in CG; p = 0.01. Higher adherence to antithrombotic drugs: 91.9% in IG vs 83.8% in CG; p=0.033 and statin therapy: 87.7% in IG vs 69.8% in CG; p <0.001. | Positive |

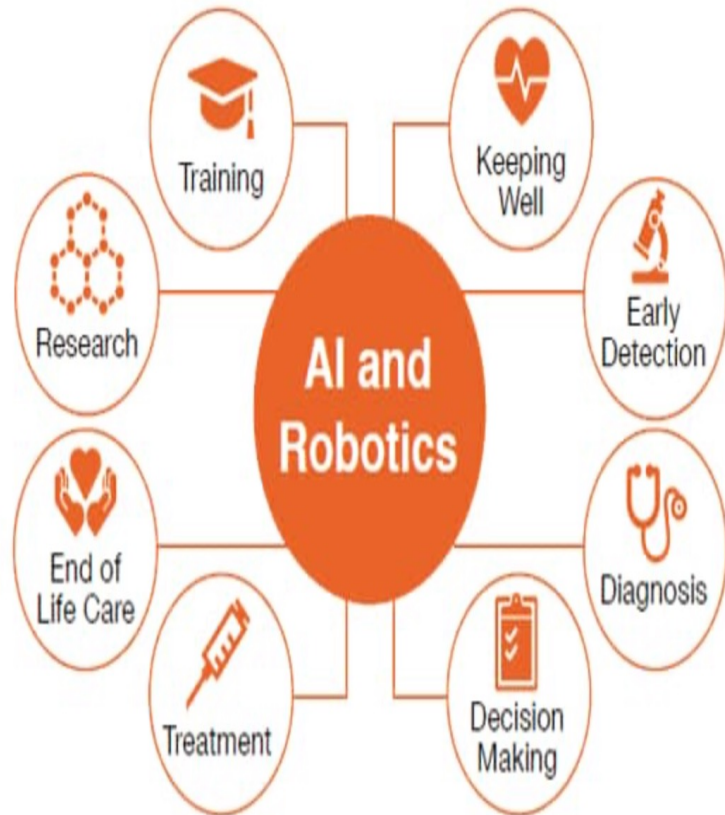
3. Future direction of interprofessional teamwork in healthcare

Big Data in Healthcare

"The Vs" of big data



Artificial Intelligence & Machine Learning



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Article | [Published: 01 January 2020](#)

International evaluation of an AI system for breast cancer screening

[Scott Mayer McKinney](#) , [Marcin Sieniek](#), ... [Shravya Shetty](#) 

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[Nature](#) **577**, 89–94 (2020) | [Cite this article](#)



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Published online 2020 Oct 12. doi: [10.1111/cts.12884](https://doi.org/10.1111/cts.12884)

PMCID: PMC7877825

PMID: [32961010](https://pubmed.ncbi.nlm.nih.gov/32961010/)

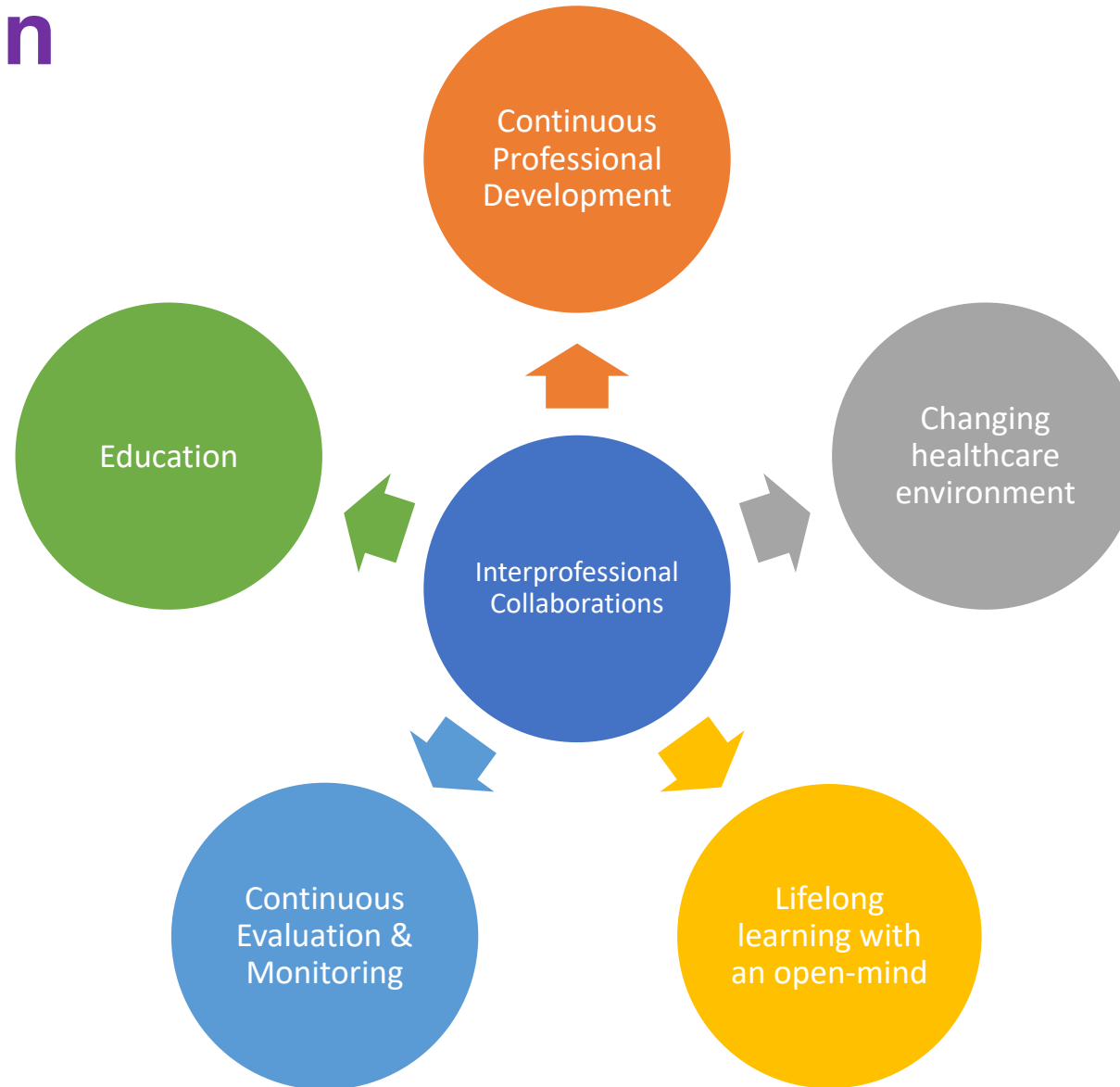
Precision Medicine, AI, and the Future of Personalized Health Care

[Kevin B. Johnson](#),^{1, 2} [Wei-Qi Wei](#),¹ [Dilhan Weeraratne](#),³ [Mark E. Frisse](#),¹ [Karl Misulis](#),^{1, 4} [Kyu Rhee](#),³ [Juan Zhao](#),¹
and [Jane L. Snowden](#)³

PWC. No longer science fiction, AI and Robotics are transforming healthcare.

<https://pwc.to/2weGo5v>

Conclusion



Questions?

