Digitally Integrated Diabetes Care

COVID-19 A Catalyst for Change

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Session Outline

- Integrated care: a long running battle
- Diabetes: an exemplar challenge for integrated care
- Emergent digital solutions to diabetes integrated care
- COVID-19: Restoration or catalysed change?

Integrated Care in the UK: A long running battle

1960's	1970's	1980's	1990's
Multidisciplinary Care	Partnership working	Coordinated working Shared planning Coordinated care Case management	Disease management Inter-agency working Shared protocols

2000's	2014	2019
Whole system working Patient Centred Care Integrated care pathways	Five Year Forward View	NHS Long Term Plan

Diabetes: An Exemplar Integrated Care Challenge

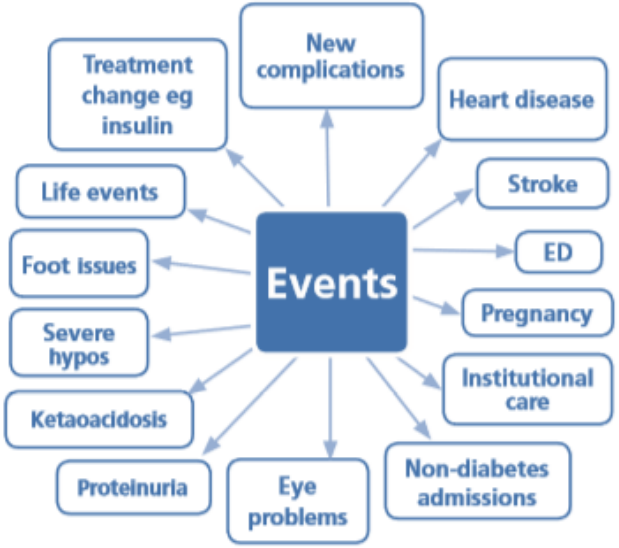
A high prevalence high cost condition spanning organizations

60 million people in Europe diagnosed with diabetes

88.5% of individuals with diabetes have at least two comorbid conditions

£10 billion

Annual cost of management in UK, of which 80% relates to management of complications



Mrs Jane Bee's story: Diabetes and heart failure collide

Mrs Bee is a 67 year old lady who has been living with type 2 diabetes for 10 years. She thinks getting diabetes was inevitable, because her mother had it too; her mother had horrible complications and went blind despite treatment. Mrs Bee is worried about such complications but doesn't know why her disease will be any different to her mother's, these injections seem to just change medical readings rather than make her feel better.

Dr Wilkins is Mrs Bee's General Practitioner (GP) and has been caring for her diabetes in the community. She has become breathless recently with some fluid at her ankles. Mrs Bee is already on a lot of tablets but he was worried about heart failure so added a water tablet. If her breathlessness keeps worsening, he will have to refer Mrs Bee to the cardiologists at the local hospital.

Mrs Bee isn't happy at having to go to the hospital to see more doctors, she has enough problems as it is, she doesn't have much sensation in her feet so mobility is a major problem but her husband helps at home.

Dr Burke is the cardiologist, he hasn't spoken directly to Dr Wilkins, but is aware of her other problems. He offers lifestyle advice and adds another medication, if her heart failure worsens she will need a pacemaker, he writes to Dr Wilkins her GP.

Mrs Bee's husband is concerned she is getting more tired and confused so is checking her blood sugar readings more often. He phones Dr Wilkins who is still waiting for the hospital letter, he advises if she isn't better by Monday to arrange an appointment at the GP practice.

Mrs Bee is admitted as an emergency to hospital, due to acute heart failure. They have outline information available from the GP. They can read Dr Burke's letter. She is suffering from pulmonary oedema and requires a specialist infusion on the cardiology ward.

Primary Prevention

Initial management

Risk reduction

Screening

Elective hospital admissions

Dietetics

Enhanced digital monitoring

Pancreatic transplant

Gestational Diabetes

Institutional care

Emergency hospital admissions

Insulin pump and closed loop

Mental health

End of life care

Socioeconomic determinants

Diagnosis

Multi-morbidity

Complex management

Secondary Prevention & reversal

Emergent Digital Solutions to Integrated Diabetes Care

Mrs Brenda Jones' story: An example of multi-morbidity in harmony

Mrs Jones is a 67 year old lady who has been living with type 2 diabetes for 10 years. She didn't understand how the new diabetes medications she was prescribed worked, but usually took them on the advice of her GP. Her GP had introduced her to the **C3-Cloud Patient Empowerment Platform**, which explained in simple language how each drug works and explains the benefits; she now never misses a dose.

Dr Wallace is Mrs Jones' GP and has been caring for her diabetes in the community. He noted some fluid on her ankles and updated her **Personalised Care Plan** via **C3-Cloud Personalised Care Plan Development Platform**, which helped reconciliation of clinical guidelines for diabetes and her new diagnosis of heart failure. **Clinical Decision Support Modules** of the Platform advised switching some medications including stopping her thiazolidinedione and goal-orientated lifestyle and activity modifications. The heart failure has since remained stable.

Mrs Jones read on her **Patient Empowerment Platform** on tablet that diabetes could cause loss of sensation to the feet. She remotely got in touch with social services, who have started adapting her home to make it safer. Remote fall sensors and wireless medical sensors including a glucometer and O^2 saturation monitor have been installed in her home to provide her with confidence that she can access help if needed. Sensors are seamlessly integrated with the **Patient Empowerment Platform**, so that readings are immediately uploaded to her profile, which then become available to her and her husband again through the **Patient Empowerment Platform** and to her multidisciplinary care team (MDT) through the **Coordinated Care and Cure Delivery Platform**.

The **Coordinated Care and Cure Delivery Platform** identified Mrs Jones breathlessness and remotely monitored O^2 saturations, deviating from the goals in the **Personalised Care Plan**, and alerted the MDT. Mrs Jones was referred to the cardiologist, who through the **Interoperability Middleware** of the platform had full access to her GP and secondary care records and sensor measurements. Using the **Personalised Care Plan Development Platform** the cardiologist, Mrs Jones and her GP (remote) modified her treatment and medication dosages, according to best evidence managing diabetes and heart failure in harmony.

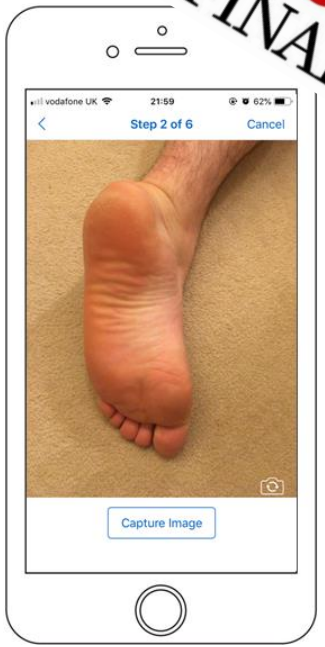
Mrs Jones' husband is concerned she is getting more breathless, he logged onto **Patient Empowerment Platform**, as an informal care giver, and read that her heart failure might have worsened, he contacted Dr Wallace her GP online.

Dr Wallace through **Coordinated Care and Cure Delivery Platform** could read the cardiology input and organized a **virtual case review meeting**. The medical teams remotely communicating with each other and Mr and Mrs Jones, who agreed to come to hospital for a scan and check-up. Being within the hospital for just 4 hours before discharged home with an outpatient cardiac resynchronisation pacemaker planned. Hospital blood tests noted her renal function had deteriorated further so metformin was stopped, as suggested by **Decision Support Modules.**

Mrs Jones is able to continue enjoying life and is having regular follow up by the cardiac nurse specialists. She is independent at home supported by the social care team, who help with the housework. Through the **Patient Empowerment Platform**, she is managing her own treatment, achieving the goals set by the MDT and sharing her story with other diabetes patients.

Integrating High Risk Diabetic Foot Care

- Current models of diabetic foot care involve disconnect between general practice, community podiatry & specialist multidisciplinary teams.
- Communication is reliant on textual descriptions of visual clinical findings through dictated letters. Limited communication prompts hospital teams tobring patients back to clinic for high frequency specialist clinic monitoring.
- Patients often adopt a passive role in management and monitoring of their disease. O
- Development and pilot implementation of the first smartphone camera based diabetic foot remote management tool.



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Integrating Low Risk Gestational Diabetes

- Pregnant ladies diagnosed with gestational diabetes have to develop a rapid understanding of diabetes management at a busy time in their lives.
- Previous care saw patients recording all results on paper and carrying the book around with them.
- Interaction between primary care, midwives, obstetrics and diabetologists.
- GDm-Health App allows automated upload of blood glucose values, patient education, communication and risk stratification.

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COVID-19 Restoration or Catalysed Change?

“We have seen more transformation of health and care services in the last four weeks than we have seen in over four decades of integrated care policy initiatives”

Urgent need to deliver efficient, remote digital services well beyond anticipated target dates

Removal of legislative, policy and organisational barriers

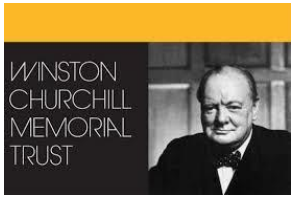
Community and voluntary sectors significantly eased pressures on acute services, providing “step down services” and other kinds of care remotely or close to patients’ homes

Considerable challenges in care home sector

Delivering Care Across Boundaries

- Flash-glucose continuous monitoring for diabetes almost universally seen as an outpatient only option.
- High rates of diabetes admissions and monitoring needs exposed staff to COVID-19 exposure risks
- Flash glucose monitoring empowers patients to self monitor their sugars and provide continuous reporting of glucose readings
- Supported by Winston Churchill Trust COVID-19 response grant we are able to “close the loop” and provide devices to high risk patients at discharge

QiC Diabetes
Quality in Care Programme 2020



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Sustaining Digitally Driven Integrated Care

- Clinical education typically lags behind real-world practice
- Digitally enabled integrated healthcare systems requires a “renewed focus on workforce development”
- Digital integration of datasets unlocks important research opportunities and could act as a driver of future research
- NHS has potential to “leverage its global reputation and integrated datasets to attract skilled experts from the global community of data scientists”
- Digital technologies must be fully integrated into NHS care and prevention pathways, otherwise their introduction will risk fragmentation, duplication and inefficiency of care delivery

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Questions

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