Nurse and Diabetes Research Literatures

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Abstract: Nursing care for hospitalized patients with diabetes has become more complex as evidence accumulates that inpatient glycemic control improves outcomes. Nursing is a professional work within the health care system on the care of individuals, families, and communities so that they may attain, maintain, or recover optimal health and quality of life. Nurses provide care within the ordering scope of physicians. In the postwar period, nurse education has undergone a process of diversification towards advanced and specialized credentials, and many of the traditional regulations and provider roles are changing. In the fifth century BC, for example, the Hippocratic Collection in places describes skilled care and observation of patients by male attendants, who may have been early nurses. This article introduces recent research reports on nursing and war as references in the related studies.

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1. Introduction

Nursing is a professional work within the health care system on the care of individuals, families, and communities so that they may attain, maintain, or recover optimal health and quality of life. Nurses provide care within the ordering scope of physicians. In the postwar period, nurse education has undergone a process of diversification towards advanced and specialized credentials, and many of the traditional regulations and provider roles are changing. In the fifth century BC, for example, the Hippocratic Collection in places describes skilled care and observation of patients by male attendants, who may have been early nurses. Nursing care for hospitalized patients with diabetes has become more complex as evidence accumulates that inpatient glycemic control improves outcomes. As novice prescribers, nurses need to be well prepared educationally and have access to supportive clinical supervision.

The following introduces recent reports as references in the related studies.

Abazari, P., Z. Vanaki, et al. "Challenges of training diabetes nurse educator in Iran." Iran J Nurs Midwifery Res. 2012 Mar;17(3):187-94.

BACKGROUND: The purpose of this study was to describe the first attempts and performance of health system in Iran in training specialist nurses in the field of diabetes- related care and education. MATERIALS AND METHODS: This was a qualitative content analysis. Three diabetes management planners in the Ministry of Health and Medical Education, three provincial executive authorities of diabetes in the health system and ten nurses who worked as diabetes nurse educators (DNEs) participated in this study. Data obtained through semi-structured face-to-face interviews, a focus group, existing documents, field notes, and multiple observations. Data analysis was guided by the conventional approach of qualitative content analysis. FINDINGS: Three major themes and six sub-themes were emerged through data analysis. Main themes were: (a) decentralization diabetes nurse educator training without any management (stop education due to transition training responsibility to provincial health authorities and lack of supervision of managers on training); (b) try to reform nursing education infrastructures (try to train qualified educators who were candidate for teaching to DNEs, try to reform undergraduate nursing curriculum); (c) failure of DNE curriculum (lack of consistency between content and timing with the curriculum objectives and lack of attention to learn evaluation process). CONCLUSIONS: The findings of this study reflected the failure and multiple challenges in educating nurses working in diabetes units. Despite the fact that important roles were defined for nurses in the action plan for preventing and controlling diabetes, any specific action was not done in preparing nurses for these roles.

Aliha, J. M., M. Asgari, et al. "Group education and nurse-telephone follow-up effects on blood glucose control and adherence to treatment in type 2 diabetes patients." Int J Prev Med. 2013 Jul;4(7):797-802.

BACKGROUND: Training and continuous dynamic communication between patients and health professionals in chronic diseases like diabetes, is important. The aim of this study is to evaluate the effects of diabetes self-care group education and nurse- telephone follow-up on glycemic control and compliance with treatment orders in patients with type 2 diabetes attending to diabetes clinic in khomein. METHODS: In this clinical trial, 62 patients with type 2 diabetes who attending to the diabetes clinic selected and were randomly assigned to experiment and control groups. Self-care group education was applied for case group (n = 31) and they were followed up using telephone calls for 12 weeks by a nurse. The control group (n = 31) received the conventional management. Demographic characteristics, compliance with treatment recommendations (diet, drug use, exercise) and blood glucose control indices were recorded before and after interventions. Data were analyzed by SPSS software version 16 using independent t-test, paired t-test, Chi-square test, non-parametric tests, mixed model (ANOVA + repeated measure) and ANCOVA. RESULTS: The mean age of intervention and control groups was 50.9 +/- 7.3 and 55.1 +/- 10.1 years, respectively. Blood glucose indices (FBS, 2 hpp BS, Hb A1C) were improved in both case and control group after intervention but it was only statistically significant in case group P > 0.0001. During study, percentage of patients with very good compliance in control group decrease from 12.5% to zero (0%), whereas in experiment group these amounts increase from 6.5% to 90.3% P > 0.0001. CONCLUSIONS: According to the results of the current study self-care group education and 12 weeks follow-up by a nurse using telephone causes significant improvement in metabolic parameters and adherence to treatment recommendations in diabetic patients.

Blackberry, I. D., J. S. Furler, et al. "Effectiveness of general practice based, practice nurse led telephone coaching on glycaemic control of type 2 diabetes: the Patient Engagement and Coaching for Health (PEACH) pragmatic cluster randomised controlled trial." BMJ. 2013 Sep 18;347:f5272. doi: 10.1136/bmj.f5272.

OBJECTIVE: To evaluate the effectiveness of goal focused telephone coaching by practice nurses in improving glycaemic control in patients with type 2 diabetes in Australia. DESIGN: Prospective, cluster randomised controlled trial, with general practices as the unit of randomisation. SETTING: General practices in Victoria, Australia. PARTICIPANTS: 59 of 69 general practices that agreed to participate recruited sufficient patients and were randomised. Of 829 patients with type 2 diabetes (glycated haemoglobin (HbA1c) >7.5% in the past 12 months) who were assessed for eligibility, 473 (236 from 30 intervention practices and 237 from 29 control practices) agreed to participate. INTERVENTION: Practice nurses from intervention practices received two days of training in a telephone coaching programme, which aimed to deliver eight telephone and one face to face coaching episodes per patient. MAIN OUTCOME MEASURES: The primary end point was mean absolute change in HbA1c between baseline and 18 months in the intervention group compared with the control group. RESULTS: The intervention and control patients were similar at baseline. None of the practices dropped out over the study period; however, patient attrition rates were 5% in each group (11/236 and 11/237 in the intervention and control group, respectively). The median number of coaching sessions received by the 236 intervention patients was 3 (interquartile range 1-5), of which 25% (58/236) did not receive any coaching sessions. At 18 months' follow-up the effect on glycaemic control did not differ significantly (mean difference 0.02, 95% confidence interval -0.20 to 0.24, P=0.84) between the intervention and control groups, adjusted for HbA1c measured at baseline and the clustering. Other biochemical and clinical outcomes were similar in both groups. CONCLUSIONS: A practice nurse led telephone coaching intervention implemented in the real world primary care setting produced comparable outcomes to usual primary care in Australia. The addition of a goal focused coaching role onto the ongoing generalist role of a practice nurse without prescribing rights was found to be ineffective. TRIAL REGISTRATION: Current Controlled Trials ISRCTN50662837.

Boltri, J. M., I. Okosun, et al. "A simple nurse-based prompt increases screening and prevention counseling for diabetes." Diabetes Res Clin Pract. 2007 Jan;75(1):81-7. Epub 2006 Jun 9.

OBJECTIVE: To determine the impact of a simple nurse-based prompt on fasting glucose screening and counseling regarding diet, exercise and weight loss to persons at increased risk for type 2 diabetes. RESEARCH DESIGN AND METHODS: Patients at risk for diabetes were recruited from 10 primary care practices. Nurses were trained to score a diabetes risk assessment and prompt providers concerning all high-risk subjects. Both univariate and multivariate logistic regression models were used to determine the association between the nurse prompt and subsequent fasting glucose testing or receiving advice for diet, exercise, or weight loss. RESULTS: Of 1176 subjects, 597 were recruited from intervention practices and 579 from control practices. In both the univariate and multivariate models, the intervention group was more likely to receive fasting glucose testing and advice for diet, exercise and weight loss. In

the multivariate model, patients in the intervention group were more likely to receive fasting glucose testing (odds ratio 9.3, 95% confidence interval 3.6-24.0), dietary advice (6.1, 3.5-10.7), exercise advice (7.4, 4.0-13.9), and weight loss advice (1.9, 1.1-3.7). CONCLUSIONS: A simple nurse-based prompt is an effective tool to increase screening and preventive services for people at risk for type 2 diabetes.

Brackney, D. E. and M. Cutshall "Prevention of type 2 diabetes among youth: a systematic review, implications for the school nurse." J Sch Nurs. 2015 Feb;31(1):6-21. doi: 10.1177/1059840514535445. Epub 2014 May 26.

Childhood obesity and the early development of type 2 diabetes (T2 DM) place students at risk for chronic health problems. The school nurse is uniquely situated to promote school health initiatives that influence health behavior. The purpose of this review was to determine effective nonpharmacological interventions for prevention of T2 DM in youth. Researchers from 35 reports modified T2 DM risk factors. These nonpharmacological interventions often include increasing daily activity, decreasing caloric intake, and increasing muscle mass. Some researchers also included psychological and social support interventions intended to strengthen initiating and/or maintaining health behavior. Characteristics of effective nonpharmacological T2 DM prevention interventions are discussed. Findings from this review are a useful guide for the implementation of T2 DM prevention strategies in the school setting. Few school-based studies included high school students; therefore, further research is needed among older adolescents on the efficacy of nonpharmacological interventions in the high school.

Brand, S. L., A. Musgrove, et al. "Evaluation of the effect of nurse education on patient-reported foot checks and foot care behaviour of people with diabetes receiving haemodialysis." Diabet Med. 2015 Jun 4. doi: 10.1111/dme.12831.

AIMS: To assess whether a programme of nurse education increased the frequency with which nurses conducted foot checks on people with diabetes undergoing haemodialysis and to evaluate whether this influenced self-reported foot care behaviour. METHODS: A non-randomized stepped-wedge design was used to evaluate a nurse education programme implemented in four UK National Health Service dialysis units. People with diabetes undergoing haemodialysis were invited to complete a questionnaire on the frequency of foot examination by health professionals, on the presence of foot problems and on their own foot care behaviour, using the Nottingham Assessment of Functional Foot-care (NAFF). An education session for nurses, including procedures for foot examination, was conducted sequentially in each of four haemodialysis units. The questionnaire was repeated at 2-monthly intervals. RESULTS: The education session resulted in a significant increase in the reported number of foot examinations by nurses ($P = 0.007$). There was also a significant improvement in reported foot care behaviour ($P < 0.001$), but this occurred between the first and second 2-monthly assessments and was unrelated to the timing of the intervention. CONCLUSIONS: A single education session can improve the routine checking of the feet of people with diabetes undergoing haemodialysis. The administration of the Nottingham Assessment of Functional Foot-care questionnaire was associated with improved self-reported foot care behaviour, reflecting greater awareness of risk in this population.

Breneman, C. B., K. Heidari, et al. "Evaluation of the Effectiveness of the H.A.N.D.S.SM Program: A School Nurse Diabetes Management Education Program." J Sch Nurs. 2015 Dec;31(6):402-10. doi: 10.1177/1059840514568895. Epub 2015 Feb 5.

The purpose of this project was to determine the effectiveness of the Helping Administer to the Needs of the Student with Diabetes in Schools (H.A.N.D.S.(sm)) continuing education program in improving the level of experience and competence in performing services associated with diabetes care. This program is a live course for school nurses providing clinical information about diabetes management and their professional role in the care of students with diabetes. Pre- and post-surveys were administered via e-mail to assess their level of experience and competence in diabetes care. A total of 105 nurses completed both surveys and were included in the analysis. The changes between pre- and post-survey questions were assessed. The H.A.N.D.S. participants' levels of experience and competence for each of the four categories of diabetes care improved significantly, and a greater number of nurses reported being able to perform the services independently and having the ability to teach others.

Carey, N. and M. Courtenay "An exploration of the continuing professional development needs of nurse independent prescribers and nurse supplementary prescribers who prescribe medicines for patients with diabetes." J Clin Nurs. 2010 Jan;19(1-2):208-16. doi: 10.1111/j.1365-2702.2009.02943.x.

BACKGROUND: Nurse Independent and Nurse Supplementary Prescribing has extended the role that nurses in the UK have in the management of care for patients with diabetes. Concerns surround nurses' pharmacological knowledge and provision of

continuing professional development to meet the needs of nurse prescribers. AIM: To examine the continuing professional development needs of nurses who prescribe medicines to patients with diabetes. DESIGN: A questionnaire survey. METHODS: The NMC database was used to randomly select and distribute questionnaires to 1992 registered Nurse Independent/Nurse Supplementary Prescribers. One thousand and four hundred questionnaires were returned. Medicines for patients with diabetes were prescribed by 439 respondents. This paper reports on the findings of these 439 nurses. RESULTS: The majority (63%) of nurses worked in general practice. Over 80% reported continuing professional development was available and that they had accessed it to support their prescribing role. Over 40% of nurses had continuing professional development needs in the areas of prescribing policy, pharmacology for diabetes and the management and treatment of diabetes related conditions. Senior nurses reported fewer continuing professional development needs. CONCLUSION: Access and provision of continuing professional development for nurse prescribers has improved since the initial implementation of nurse prescribing. However, nurse's pharmacological knowledge and the provision of continuing professional development continue to be an area of concern which warrant further investigation. RELEVANCE TO CLINICAL PRACTICE: Previous concerns have been identified about the provision of continuing professional development to meet the needs of nurse prescribers. Pharmacological knowledge is still the greatest continuing professional development requirement of nurses who prescribe for patients with diabetes. Education providers may wish to consider developing the content of continuing professional development programmes to meet these needs.

Carolan, M. "Diabetes nurse educators' experiences of providing care for women, with gestational diabetes mellitus, from disadvantaged backgrounds." J Clin Nurs. 2014 May;23(9-10):1374-84. doi: 10.1111/jocn.12421. Epub 2013 Dec 7.

AIMS AND OBJECTIVES: To explore diabetes nurse educators' experiences of providing care for women, with gestational diabetes mellitus, from disadvantaged backgrounds and to gather information which would assist with the development of an educational programme that would support both women and diabetes educators. BACKGROUND: Rates of gestational diabetes mellitus have increased dramatically in recent years. This is concerning as gestational diabetes mellitus is linked to poorer pregnancy outcomes including hypertension, stillbirth, and nursery admission. Poorest outcomes occur among disadvantaged women. gestational diabetes mellitus is also associated with maternal type 2 diabetes and with child obesity and type 2 diabetes among offspring. Effective self-management of gestational diabetes mellitus reduces these risks. Diabetes nurse educators provide most education and support for gestational diabetes mellitus self-management. DESIGN: An interpretative phenomenological analysis approach, as espoused by Smith and Osborn (Qualitative Psychology: A Practical Guide to Research Methods, 2008, Sage, London, 51), provided the framework for this study. METHODS: The views of six diabetes educators were explored through in-depth interviewing. Interviews were transcribed verbatim and analysed according to steps outlined by Smith and Osborn (Qualitative Psychology: A Practical Guide to Research Methods, 2008, Sage, London, 51). RESULTS: Three themes emerged from the data: (1) working in a suboptimal environment, (2) working to address the difficulties and (3) looking to the future. Throughout, the diabetes nurse educators sought opportunities to connect with women in their care and to make the educational content understandable and meaningful. CONCLUSIONS: Low literacy among disadvantaged women has a significant impact on their understanding of gestational diabetes mellitus information. In turn, catering for women with low literacy contributes to increased workloads for diabetes nurse educators, making them vulnerable to burnout. RELEVANCE TO CLINICAL PRACTICE: There is a need for targeted educational programmes for women with low literacy. Resources should be literacy appropriate, with photographs and simple text, and include culturally appropriate foods and information. This approach should lead to an improvement in the women's uptake of gestational diabetes mellitus information and may lead to a lessening of the workload burden for diabetes nurse educators.

Clark, C. E., L. F. Smith, et al. "Nurse-led interventions used to improve control of high blood pressure in people with diabetes: a systematic review and meta-analysis." Diabet Med. 2011 Mar;28(3):250-61. doi: 10.1111/j.1464-5491.2010.03204.x.

BACKGROUND: Previous reviews demonstrate uncertainty about the effectiveness of nurse-led interventions in the management of hypertension. No specific reviews in diabetes have been identified. We have systematically reviewed the evidence for effectiveness of nurse-led interventions for people with diabetes mellitus. METHODS: In this systematic review and meta-analysis, searches of Medline, Embase, CINAHL and the Cochrane Central Trials register were undertaken to identify studies comparing any intervention conducted by nurses in managing hypertension in diabetes with usual doctor-

led care. Additional citations were identified from papers retrieved and correspondence with authors. Outcome measures were absolute systolic and diastolic blood pressure, change in blood pressure, proportions achieving study target blood pressure and proportions prescribed anti-hypertensive medication. RESULTS: Eleven studies were identified. Interventions included adoption of treatment algorithms, nurse-led clinics and nurse prescribing. Meta-analysis showed greater reductions in blood pressure in favour of any nurse-led interventions (systolic weighted mean difference -5.8 mmHg, 95% CI -9.6 to -2.0; diastolic weighted mean difference -4.2 mmHg, 95% CI -7.6 to -0.7) compared with usual doctor-led care. No overall superiority in achievement of study targets or in the use of medication was evident for any nurse-based interventions over doctor-led care. CONCLUSIONS: There is some evidence for improved blood pressure outcomes with nurse-led interventions for hypertension in people with diabetes compared with doctor-led care. Nurse-based interventions require an algorithm to structure care and there is some preliminary evidence for better outcomes with nurse prescribing. Further work is needed to elucidate which nurse-led interventions are most effective.

Corl, D. E., S. McCliment, et al. "Efficacy of diabetes nurse expert team program to improve nursing confidence and expertise in caring for hospitalized patients with diabetes mellitus." J Nurses Prof Dev. 2014 May-Jun;30(3):134-42. doi: 10.1097/NND.0000000000000068.

Nursing care for hospitalized patients with diabetes has become more complex as evidence accumulates that inpatient glycemic control improves outcomes. Previous studies have highlighted challenges for educators in providing inpatient diabetes education to nurses. In this article, the authors show that a unit-based diabetes nurse expert team model, developed and led by a diabetes clinical nurse specialist, effectively increased nurses' confidence and expertise in inpatient diabetes care. Adapting this model in other institutions may be a cost-effective way to improve inpatient diabetes care and safety as well as promote professional growth of staff nurses.

Couch, C., P. Sheffield, et al. "Clinical outcomes in patients with type 2 diabetes managed by a diabetes resource nurse in a primary care practice." Proc (Bayl Univ Med Cent). 2003 Jul;16(3):336-40.

OBJECTIVES: The purpose of this observational cohort study was to observe outcomes in geriatric (aged > or =65 years) and nongeriatric (<65 years) patients after employing a diabetes resource nurse (DRN) case manager in a suburban 12-physician family practice. STUDY DESIGN: Data were collected by retrospective chart review of 106 patients enrolled in the diabetes care project who completed at least 6 months of the project between March 1999 and January 2001. POPULATION: Patients were recruited by either referral from their primary physician or invitation from the DRN. OUTCOMES MEASURED: Utilizing measures from the American Diabetes Association and the Diabetes Quality Improvement Project, comprehensive protocols were developed for implementation of process measures and management of glucose by the DRN. Active management protocols were not put in place for hypertension, lipids, or depression, but appropriate clinical measures were taken during patient visits. Data were collected at baseline, 6 months, and 12 months. RESULTS: Improvements in process measures were seen for geriatric and nongeriatric patients: 77% of patients had foot exams, 100% had > or =2 blood pressure measurements, 92% had eye exams, and 99% had lipid profiles. Both groups had improvement in hemoglobin A1c levels (means 7.2% to 6.6% for geriatric patients and 8.9% to 6.8% for nongeriatric patients). The number of hypoglycemia incidents decreased in both groups. Depression scores improved in the nongeriatric group. CONCLUSIONS: Results appear to corroborate a growing body of evidence supporting nurse intervention protocols as a way to improve diabetes care. A randomized controlled trial is planned to examine the effectiveness of the DRN.

Courtenay, M., K. Stenner, et al. "The views of patients with diabetes about nurse prescribing." Diabet Med. 2010 Sep;27(9):1049-54. doi: 10.1111/j.1464-5491.2010.03051.x.

AIMS: To explore the views of patients with diabetes about nurse prescribing and the perceived advantages and disadvantages. METHODS: Patients were recruited from the case-loads of seven nurse prescribers in six National Health Service sites in England. Sites reflected the key settings in which nurses typically prescribe for patients with diabetes within primary care. Forty-one interviews were undertaken by trained qualitative researchers. Interviews addressed opinions and experiences of nurse prescribing; audiotapes were transcribed, coded, and themes identified. RESULTS: Patients were confident in nurse prescribing. Distinctions were made between the role of the nurse and that of the doctor, and views varied with regard to the extent patients felt nurses should work autonomously. Confidence in nurse prescribing was inspired by nurses' specialist knowledge and experience, a mutual trusting relationship, a thorough consultation, and experience of the benefits of nurse prescribing. Communication between nurses and doctors about patient care, awareness by nurses of their area of competence,

training and experience, specialist diabetes knowledge and access to training updates were considered important for safe prescribing. Patterns of attendance had changed in some cases, with patients tending to see doctors less often. Access to medicines was improved for patients during non-routine/emergency situations. CONCLUSIONS: Nurse prescribing is acceptable to patients and can increase the efficiency of diabetes service in primary care. Workforce planners need to include the services of nurse prescribers alongside those of doctors.

Dale, J., I. Caramlau, et al. "Telecare motivational interviewing for diabetes patient education and support: a randomised controlled trial based in primary care comparing nurse and peer supporter delivery." Trials. 2007 Jun 28;8:18.

BACKGROUND: There is increasing interest in developing peer-led and 'expert patient'-type interventions, particularly to meet the support and informational needs of those with long term conditions, leading to improved clinical outcomes, and pressure relief on mainstream health services. There is also increasing interest in telephone support, due to its greater accessibility and potential availability than face to face provided support. The evidence base for peer telephone interventions is relatively weak, although such services are widely available as support lines provided by user groups and other charitable services. METHODS/DESIGN: In a 3-arm RCT, participants are allocated to either an intervention group with Telecare service provided by a Diabetes Specialist Nurse (DSN), an intervention group with service provided by a peer supporter (also living with diabetes), or a control group receiving routine care only. All supporters underwent a 2-day training in motivational interviewing, empowerment and active listening skills to provide telephone support over a period of up to 6 months to adults with poorly controlled type 2 diabetes who had been recommended a change in diabetes management (i.e. medication and/or lifestyle changes) by their general practitioner (GP). The primary outcome is self-efficacy; secondary outcomes include HbA1c, total and HDL cholesterol, blood pressure, body mass index, and adherence to treatment. 375 participants (125 in each arm) were sought from GP practices across West Midlands, to detect a difference in self-efficacy scores with an effect size of 0.35, 80% power, and 5% significance level. Adults living with type 2 diabetes, with an HbA1c > 8% and not taking insulin were initially eligible. A protocol change 10 months into the recruitment resulted in a change of eligibility by reducing HbA1c to > 7.4%. Several qualitative studies are being conducted alongside the main RCT to describe patient, telecare supporter and practice nurse experience of the trial. DISCUSSION AND IMPLICATIONS OF THE RESEARCH: With its focus on self-management and telephone peer support, the intervention being trialled has the potential to support improved self-efficacy and patient experience, improved clinical outcomes and a reduction in diabetes-related complications. TRIAL REGISTRATION: Current Controlled Trials, ISRCTN63151946.

Davidson, M. B., M. Castellanos, et al. "Effective diabetes care by a registered nurse following treatment algorithms in a minority population." Am J Manag Care. 2006 Apr;12(4):226-32.

OBJECTIVE: To compare usual care with nurse-directed care for patients with diabetes. STUDY DESIGN: Randomized before-after trial. METHODS: Diabetic patients were randomly selected for a diabetes managed care program (DMCP), in which a specially trained registered nurse, supervised by an endocrinologist, followed detailed treatment algorithms. Process and outcome measures during the year before DMCP entry were compared with those during the first year of DMCP enrollment. RESULTS: A total of 367 patients completed a full year in the DMCP. Data from the prior year were available for 331 patients. Among a subset of Latino patients, 95% earned less than 25,000 US dollars and 73% had an education of 6th grade or less. Process measures recommended by the American Diabetes Association (ADA) were met 98% of the time during the DMCP year compared with 54% of the time during the prior year (P <.001). Mean glycosylated hemoglobin (A1C) levels fell from 9.3% to 8.7% in the year before entry into the DMCP and to 7.0% by the end of the first DMCP year (P < .001). At DMCP entry, 28% met the ADA A1C goal of <7%; 60% did so at the end of the year. Fifty-one percent met the ADA low-density lipoprotein cholesterol goal at entry into the DMCP compared with 82% at the end of the year. CONCLUSION: A nurse making clinical decisions based on detailed treatment algorithms did a better job of achieving ADA-recommended process and outcome measures than physicians providing usual care.

DePue, J. D., S. Dunsiger, et al. "Nurse-community health worker team improves diabetes care in American Samoa: results of a randomized controlled trial." Diabetes Care. 2013 Jul;36(7):1947-53. doi: 10.2337/dc12-1969. Epub 2013 Feb 7.

OBJECTIVE: To evaluate the effectiveness of a culturally adapted, primary care-based nurse-community health worker (CHW) team intervention to support diabetes self-management on diabetes control and other biologic measures. RESEARCH DESIGN AND METHODS: Two hundred sixty-eight Samoan

participants with type 2 diabetes were recruited from a community health center in American Samoa and were randomly assigned by village clusters to the nurse-CHW team intervention or to a wait-list control group that received usual care. RESULTS: Participants had a mean age of 55 years, 62% were female, mean years of education were 12.5 years, 41% were employed, and mean HbA1c was 9.8% at baseline. At 12 months, mean HbA1c was significantly lower among CHW participants, compared with usual care, after adjusting for confounders (b = -0.53; SE = 0.21; P = 0.03). The odds of making a clinically significant improvement in HbA1c of at least 0.5% in the CHW group was twice the odds in the usual care group after controlling for confounders (P = 0.05). There were no significant differences in blood pressure, weight, or waist circumference at 12 months between groups. CONCLUSIONS: A culturally adapted nurse-CHW team intervention was able to significantly improve diabetes control in the U.S. Territory of American Samoa. This represents an important translation of an evidence-based model to a high-risk population and a resource-poor setting.

Domzal-Drzewicka, R. and K. Pasternak "The tasks of a community nurse in the process of an early detection of type 2 diabetes." Ann Univ Mariae Curie Sklodowska Med. 2004;59(1):481-4.

Type 1 diabetes affects 3,000 individuals annually, whereas type 2 diabetes attacks about 60,000 people, which qualifies the illness to be the number 9 "killer" among Polish citizens. World health organisation prognoses that in the years of 2000-2025 the number of type 2 diabetes patients is going to double. This prognosis gives rise to a conclusion that diabetes prevention is becoming one of the priority tasks of all medical professionals and requires the necessity of changing and elaborating of effective, interdisciplinary prevention programs. The main aim of the study was a description of the tasks awaiting the community nurse in the process of an early diagnosis of diabetes. In the research, the analysis of the data included in the community nurse documentation--the family questionnaire, was used. The questionnaire is the document in which nurses in charge register the data concerning patients acquired in the community interview as well as the results of basic study values.

Due-Christensen, M., G. Kaldan, et al. "Out-of-office hours nurse-driven acute telephone counselling service in a large diabetes outpatient clinic: A mixed methods evaluation." Patient Educ Couns. 2015 Jul;98(7):890-4. doi: 10.1016/j.pec.2015.03.014. Epub 2015 Mar 23.

OBJECTIVE: To map the usage of out-of-office hours acute telephone counselling (ATC) provided by diabetes specialist nurses (n=18) for diabetes patients to explore potentials for improvement. METHODS: A mixed methods study involved mapping of ATC-usage during 6 months and a retrospective audit of frequent users. RESULTS: Altogether, 3197 calls were registered that were related to 592 individual patients, corresponding to 10% of the population. Proportionally more users suffered from type 1 diabetes (p<0.001). ATC-users' mean HbA1c was 8.8% (73 mmol/mol) compared to 8.1% (65 mmol/mol) for all patients attending the clinic (p<0.001). Hyperglycaemia was the most frequent reason for calling. The use of ATC likely prevented 15 admissions. More than half of the calls came from general nurses based in the community (n=619) and general nurses and nursing assistants based in care homes (n=1018). The majority (75%) of patients called less than five times. However, 8% called 16 times or more accounting for 52% of all calls. A retrospective audit identified them as physically and/or psychologically fragile patients. CONCLUSION: Hyperglycaemia was the most frequent reason for calling, and insulin dose adjustment the most frequent advice given. PRACTICE IMPLICATIONS: Frequent users identified need additional support.

Edelman, D., R. J. Dolor, et al. "Nurse-led behavioral management of diabetes and hypertension in community practices: a randomized trial." J Gen Intern Med. 2015 May;30(5):626-33. doi: 10.1007/s11606-014-3154-9. Epub 2015 Jan 8.

BACKGROUND: Several trials have demonstrated the efficacy of nurse telephone case management for diabetes (DM) and hypertension (HTN) in academic or vertically integrated systems. Little is known about the real-world potency of these interventions. OBJECTIVE: To assess the effectiveness of nurse behavioral management of DM and HTN in community practices among patients with both diseases. DESIGN: The study was designed as a patient-level randomized controlled trial. PARTICIPANTS: Participants included adult patients with both type 2 DM and HTN who were receiving care at one of nine community fee-for-service practices. Subjects were required to have inadequately controlled DM (hemoglobin A1c [A1c] >/= 7.5%) but could have well-controlled HTN. INTERVENTIONS: All patients received a call from a nurse experienced in DM and HTN management once every two months over a period of two years, for a total of 12 calls. Intervention patients received tailored DM- and HTN-focused behavioral content; control patients received non-tailored, non-interactive information regarding health issues unrelated to DM and HTN (e.g., skin cancer prevention). MAIN OUTCOMES AND MEASURES: Systolic blood pressure (SBP) and A1c were co-primary outcomes, measured at 6, 12, and 24

months; 24 months was the primary time point. RESULTS: Three hundred seventy-seven subjects were enrolled; 193 were randomized to intervention, 184 to control. Subjects were 55% female and 50% white; the mean baseline A1c was 9.1% (SD = 1%) and mean SBP was 142 mmHg (SD = 20). Eighty-two percent of scheduled interviews were conducted; 69% of intervention patients and 70% of control patients reached the 24-month time point. Expressing model estimated differences as (intervention--control), at 24 months, intervention patients had similar A1c [diff = 0.1 %, 95 % CI (-0.3, 0.5), p = 0.51] and SBP [diff = -0.9 mmHg, 95% CI (-5.4, 3.5), p = 0.68] values compared to control patients. Likewise, DBP (diff = 0.4 mmHg, p = 0.76), weight (diff = 0.3 kg, p = 0.80), and physical activity levels (diff = 153 MET-min/week, p = 0.41) were similar between control and intervention patients. Results were also similar at the 6- and 12-month time points. CONCLUSIONS: In nine community fee-for-service practices, telephonic nurse case management did not lead to improvement in A1c or SBP. Gains seen in telephonic behavioral self-management interventions in optimal settings may not translate to the wider range of primary care settings.

Edwall, L. L., E. Danielson, et al. "The meaning of a consultation with the diabetes nurse specialist." Scand J Caring Sci. 2010 Jun;24(2):341-8. doi: 10.1111/j.1471-6712.2009.00726.x. Epub 2009 Dec 20.

OBJECTIVE: The aim of this study was to elucidate the essential meaning of a consultation between diabetes nurse specialists and patients to gain a deeper understanding of the patients' experiences. METHODS: Twenty patients with type 2 diabetes were interviewed about their experience of a consultation at an annual check-up with the diabetes nurse specialist. A phenomenological hermeneutic method was used in the analysis and interpretation of the text. RESULTS: The patient's experience of a consultation was interpreted as manifestation of hold on the disease control. This means a safeguard to continue daily life shown in the four themes being controlled, feeling exposed, feeling comfortable, and feeling prepared. CONCLUSION: The patients' experiences of a consultation with the diabetes nurse specialist became the basis for a health maintenance process in dealing with critical health-disease aspects. IMPLICATIONS TO PRACTICE: In a consultation, professionals have to take into account the potential emotional turbulence that disease progression can mean to a patient. Diabetes care implies patient dependence on support to avoid a potential self-management insufficiency and call attention to professionals' time for listening to patients' perceptions.

Everett, C., C. Thorpe, et al. "Physician assistants and nurse practitioners perform effective roles on teams caring for Medicare patients with diabetes." Health Aff (Millwood). 2013 Nov;32(11):1942-8. doi: 10.1377/hlthaff.2013.0506.

One approach to the patient-centered medical home, particularly for patients with chronic illnesses, is to include physician assistants (PAs) and nurse practitioners (NPs) on primary care teams. Using Medicare claims and electronic health record data from a large physician group, we compared outcomes for two groups of adult Medicare patients with diabetes whose conditions were at various levels of complexity: those whose care teams included PAs or NPs in various roles, and those who received care from physicians only. Outcomes were generally equivalent in thirteen comparisons. In four comparisons, outcomes were superior for the patients receiving care from PAs or NPs, but in three other comparisons the outcomes were superior for patients receiving care from physicians only. Specific roles performed by PAs and NPs were associated with different patterns in the measure of the quality of diabetes care and use of health care services. No role was best for all outcomes. Our findings suggest that patient characteristics, as well as patients' and organizations' goals, should be considered when determining when and how to deploy PAs and NPs on primary care teams. Accordingly, training and policy should continue to support role flexibility for these health professionals.

Farmer, A., W. Hardeman, et al. "An explanatory randomised controlled trial of a nurse-led, consultation-based intervention to support patients with adherence to taking glucose lowering medication for type 2 diabetes." BMC Fam Pract. 2012 Apr 5;13:30. doi: 10.1186/1471-2296-13-30.

BACKGROUND: Failure to take medication reduces the effectiveness of treatment leading to increased morbidity and mortality. We evaluated the efficacy of a consultation-based intervention to support objectively-assessed adherence to oral glucose lowering medication (OGLM) compared to usual care among people with type 2 diabetes. METHODS: This was a parallel group randomised trial in adult patients with type 2 diabetes and HbA1c >/= 7.5% (58 mmol/mol), prescribed at least one OGLM. Participants were allocated to a clinic nurse delivered, innovative consultation-based intervention to strengthen patient motivation to take OGLM regularly and support medicine taking through action-plans, or to usual care. The primary outcome was the percentage of days on which the prescribed dose of medication was taken, measured objectively over 12 weeks with

an electronic medication-monitoring device (TrackCap, Aardex, Switzerland). The primary analysis was intention-to-treat. RESULTS: 211 patients were randomised between July 1, 2006 and November 30, 2008 in 13 British general practices (primary care clinics). Primary outcome data were available for 194 participants (91.9%). Mean (sd) percentage of adherent days was 77.4% (26.3) in the intervention group and 69.0% (30.8) in standard care (mean difference between groups 8.4%, 95% confidence interval 0.2% to 16.7%, p = 0.044). There was no significant adverse impact on functional status or treatment satisfaction. CONCLUSIONS: This well-specified, theory based intervention delivered in a single session of 30 min in primary care increased objectively measured medication adherence, with no adverse effect on treatment satisfaction. These findings justify a definitive trial of this approach to improving medication adherence over a longer period of time, with clinical and cost-effectiveness outcomes to inform clinical practice.

Ferrara, A., M. M. Hedderson, et al. "Referral to telephonic nurse management improves outcomes in women with gestational diabetes." Am J Obstet Gynecol. 2012 Jun;206(6):491.e1-5. doi: 10.1016/j.ajog.2012.04.019. Epub 2012 Apr 24.

OBJECTIVE: We sought to determine whether, among women with gestational diabetes mellitus, referral to a telephonic nurse management program was associated with lower risk of macrosomia and increased postpartum glucose testing. STUDY DESIGN: There was medical center-level variation in the percent of patients referred to a telephonic nurse management program at 12 Kaiser Permanente medical centers, allowing us to examine in a quasi-experimental design the associations between referral and outcomes. RESULTS: Compared with women from centers where the annual proportion of referral nurse management was <30%, women who delivered from centers with an annual referral proportion >70% were less likely to have a macrosomic infant and more likely to have postpartum glucose testing (multiple-adjusted odds ratio, 0.75; 95% confidence interval, 0.57-0.98 and multiple-adjusted odds ratio, 22.96; 95% confidence interval, 2.56-3.42, respectively). CONCLUSION: Receiving care at the centers with higher referral frequency to telephonic nurse management for gestational diabetes mellitus was associated with decreased risk of macrosomic infant and increased postpartum glucose testing.

Fischer, H. H., S. L. Eisert, et al. "Nurse-run, telephone-based outreach to improve lipids in people with diabetes." Am J Manag Care. 2012 Feb;18(2):77-84.

BACKGROUND: There is a need for randomized, prospective trials of case management interventions with resource utilization analyses. OBJECTIVES: To determine whether algorithm-driven telephone care by nurses improves lipid control in patients with diabetes. DESIGN: Prospective, randomized, controlled trial. PARTICIPANTS: Adults with diabetes at a federally funded community health center were randomly assigned to intervention (n = 381) or usual-care (n = 381) groups. INTERVENTIONS: Nurses independently initiated and titrated lipid therapy and promoted behavioral change through motivational interviewing and self-management techniques. Other parameters of diabetes care were addressed based on time constraints. MAIN MEASURES: The primary outcome was the proportion of patients with a low-density lipoprotein (LDL) less than 100 mg/dL. Secondary outcomes included the number of hospital admissions, total hospital charges per patient, and the proportion of patients meeting other lipid, glycemic, and blood pressure guidelines. KEY RESULTS: The percent of patients with an LDL < 100 mg/dL increased from 52.0% to 58.5% in the intervention group and decreased from 55.6% to 46.7% in the control group (P < .01). Average cost per patient to the healthcare system was less for the intervention group ($6600 vs $9033, P = .03). Intervention patients trended toward fewer hospital admissions (P = .06). The intervention did not affect glycemic and blood pressure outcomes. CONCLUSIONS: Nurses can improve lipid control in patients with diabetes in a primarily indigent population through telephone care using moderately complex algorithms, but a more targeted approach is warranted. Telephone-based outreach may decrease resource utilization, but more study is needed.

Furler, J. S., I. D. Blackberry, et al. "Stepping up: a nurse-led model of care for insulin initiation for people with type 2 diabetes." Fam Pract. 2014 Jun;31(3):349-56. doi: 10.1093/fampra/cmt085. Epub 2014 Jan 28.

BACKGROUND: Most people with type 2 diabetes (T2D) have glycaemic levels outside of target. Insulin is effective in improving glycaemia and most people with T2D eventually need this. Despite this, transition to insulin therapy is often delayed in primary care. OBJECTIVE: To develop a model of care (Stepping Up) for insulin initiation in routine diabetes care in Australian general practice. To evaluate the model for feasibility of integration within routine general practice care. METHODS: Drawing on qualitative work and normalisation process theory, we developed a model of care that included clarification of roles, in-practice systems and simple clinical tools. The model was introduced in an educational and practice system change intervention for general

practitioners (GPs) and practice nurses (PNs). Five practices (seven GPs and five PNs) and 18 patients formed the feasibility study. Evaluation at 3 and 12 months explored experiences of GPs, PNs and patients. RESULTS: Fourteen patients commenced insulin, with average HbA1c falling from 8.4% (68.3 mmol/mol) to 7.5% (58.5 mmol/mol) at 3 months. Qualitative evaluation highlighted how the model of care supported integration of the technical work of insulin initiation within ongoing generalist GP care. Ensuring peer support for patients and issues of clinical accountability and flexibility, managing time and resources were highlighted as important. CONCLUSIONS: The Stepping Up model allowed technical care to be embedded within generalist whole-person care, supported clinicians and practice system to overcome clinical inertia and supported patients to make the timely transition to insulin. Testing of the model's effectiveness is now underway.

Gabbay, R. A., I. Lendel, et al. "Nurse case management improves blood pressure, emotional distress and diabetes complication screening." Diabetes Res Clin Pract. 2006 Jan;71(1):28-35. Epub 2005 Jul 12.

We studied the impact of nurse case management (NCM) on blood pressure (BP), hemoglobin A1C, lipids, and diabetes complication screening. A 1-year randomized-controlled trial was conducted in two primary care clinics of the Penn State Hershey Medical Center. Diabetes patients were randomized to control group (CG) (n=182) who received usual care by their primary care provider and intervention group (IG) (n=150) who received additional NCM care, including self-management education, and implementation of diabetes guidelines. Primary outcomes included BP, A1C, lipid, process measures, and secondary outcome was diabetes-related emotional distress as assessed by Problem Areas in Diabetes (PAID). BP significantly decreased from 137/77 to 129/72 in IG as compared to an increase from 136/77 to 138/79 in CG after 1 year. PAID scores improved significantly in IG (from 23 to 10) due to reduced emotional stress. A1C (7.4) and LDL (105) were unaffected. Complications screening significantly improved in IG compared to CG: opthalmologic exam 26 to 68%, foot exam 47 to 64%, and nephropathy screening 34 to 72%. NCM improved BP, diabetes-related emotional distress, and process measures in primary care. Unchanged A1C and lipids might be due to a threshold effect. Intervention based upon initial risk assessment may prove more cost-effective.

Garcia-Patterson, A., E. Martin, et al. "Nurse-based management in patients with gestational diabetes." Diabetes Care. 2003 Apr;26(4):998-1001.

OBJECTIVE: To compare the rate of insulin treatment and perinatal outcome in women with gestational diabetes mellitus (GDM) under endocrinologist-based versus diabetes nurse-based metabolic management. RESEARCH DESIGN AND METHODS: In a retrospective analysis, maternal characteristics, rate of insulin treatment, and perinatal outcome of patients with GDM delivering between 1 January 1995 and 30 June 1997 (n = 244) receiving endocrinologist-based care were compared with those delivering between 1 July 1997 and 31 December 1999 (n = 283) who received diabetes nurse-based care. The diabetes nurse's role was similar to that of an advanced practice nurse in the U.S. There were no changes in the metabolic goals and instruments or in obstetric and neonatal management. Quantitative data were compared with the Mann-Whitney U test and categorical data, with Fisher's exact test. RESULTS: Maternal characteristics (age, BMI, family history of diabetes, prior glucose intolerance, gestational age, and blood glucose at diagnosis of GDM) did not differ between groups treated during the two periods. Rates of insulin treatment and perinatal outcome (hypertension, preterm delivery, cesarean section, low Apgar score, macrosomia, small- and large-for-gestational-age newborns, obstetric trauma, major malformations, hypoglycemia, hypocalcemia, polycythemia, jaundice, respiratory distress, and mortality) were also similar in both groups. CONCLUSIONS: Comparison of periods of endocrinologist-based and diabetes nurse-based metabolic management of women with GDM showed no differences in the rate of insulin treatment and perinatal outcome. This supports a more active role of nurses in the management of women with GDM.

Gary, T. L., L. R. Bone, et al. "Randomized controlled trial of the effects of nurse case manager and community health worker interventions on risk factors for diabetes-related complications in urban African Americans." Prev Med. 2003 Jul;37(1):23-32.

BACKGROUND: African Americans suffer disproportionately from diabetes complications, but little research has focused on how to improve diabetic control in this population. There are also few or no data on a combined primary care and community-based intervention approach. METHODS: We randomly assigned 186 urban African Americans with type 2 diabetes (76% female, mean A SD age 59 A 9 years) to 1 of 4 parallel arms: (1) usual care only; (2) usual care + nurse case manager (NCM); (3) usual care + community health worker (CHW); (4) usual care + nurse case manager/community health worker team. Using the framework of the Precede-Proceed behavioral model, interventions included patient counseling regarding self-care practices and physician

reminders. RESULTS: The 2-year follow-up visit was completed by 149 individuals (84%). Compared to the Usual care group, the NCM group and the CHW group had modest declines in HbA(1c) over 2 years (0.3 and 0.3%, respectively), and the combined NCM/CHW group had a greater decline in HbA(1c) (0.8%. P = 0.137). After adjustment for baseline differences and/or follow-up time, the combined NCM/CHW group showed improvements in triglycerides (-35.5 mg/dl; P = 0.041) and diastolic blood pressure, compared to the usual care group (-5.6 mmHg; P = 0.042). CONCLUSIONS: Combined NCM/CHW interventions may improve diabetic control in urban African Americans with type 2 diabetes. Although results were clinically important, they did not reach statistical significance. This approach deserves further attention as a means to reduce the excess risk of diabetic complications in African Americans.

Gill, G. V., C. Price, et al. "An effective system of nurse-led diabetes care in rural Africa." Diabet Med. 2008 May;25(5):606-11. doi: 10.1111/j.1464-5491.2008.02421.x.

AIMS: Delivering adequate diabetes care is difficult in rural Africa because of drug and equipment shortages; as well as lack of trained medical expertise. We aimed to set up and evaluate a nurse-led protocol and education-based system in rural Kwazulu Natal in South Africa. METHODS: A treatment algorithm and education system adapted from previously validated methods was used; care was devolved to primary health clinics and was delivered by two nurses. Glycaemic control was assessed by glycated haemoglobin (HbA1c), assayed off site and not available for clinical use during the study. Results A total of 284 patients were enrolled, with 197 followed for 18 months (13 died and 26% lapsed during the period). HbA1c was 11.6 +/- 4.5% (sd) at baseline, 8.7 +/- 2.3% at 6 months and 7.7 +/- 2.0% at 18 months. There was a small associated increase in weight but no increase in hypoglycaemia. Subgroup analysis showed that education alone, without drug type or dose changes, also improved control (HbA1c 10.6 +/- 4.2% baseline and 7.6 +/- 2.3% at 18 months). The service was very popular with patients, families and other health workers. CONCLUSIONS: We conclude that a simple protocol and education-based diabetes care system can be successfully introduced and run by nurses in rural Africa. Medium-term glycaemic improvements are excellent and the service has been very well received.

Griffiths, P., T. Murrells, et al. "Hospital admissions for asthma, diabetes and COPD: is there an association with practice nurse staffing? A cross sectional study using routinely collected data." BMC Health Serv Res. 2010 Sep 21;10:276. doi: 10.1186/1472-6963-10-276.

BACKGROUND: Delivering good quality primary care for patients with chronic conditions has the potential to reduce non-elective hospital admissions. Practice nurse staffing levels in England have been linked to attainment of general practice performance targets for some chronic conditions. The aim of this study was to examine whether practice nurse staffing level is similarly associated with non-elective hospital admissions in three clinical areas: asthma, Chronic Obstructive Pulmonary Disease (COPD) and diabetes. METHODS: This observational study used cross sectional analysis of routinely collected data. Hospital admissions data for the period 2005-2006 (for asthma, COPD and diabetes) were linked with a database of practice characteristics, nurse staffing data and data on population characteristics for the same period. Statistical modelling explored the relationship between non-elective hospital admission rates for the three conditions and the list size per full time equivalent (FTE) practice nurse. RESULTS: Higher practice nurse staffing levels were significantly associated with lower rates of admission for asthma ($p < 0.001$) and COPD ($p < 0.001$). A similar association was seen for patients with two or more admissions ($p < 0.05$ for asthma and $p < 0.001$ for COPD). For diabetes, higher practice nurse staffing level was significantly associated with higher admission rates ($p < 0.05$), but this association was not significant in case of patients with two or more admissions. Across all models, increasing deprivation was associated with higher admission rates for all conditions. CONCLUSIONS: The inconsistent relationship between nurse staffing and patient outcomes across the different conditions and the fact that for diabetes the relationship between staffing and outcomes was in a different direction from the association between staffing and care quality, highlights the need to avoid making a simple causal interpretation of these findings and reduces the possible confidence in such conclusions. There is a need for more research into the organisation and delivery of diabetes care services in general practice, preferably using patient level data; in order to better understand the impact of the different staffing configurations on patient outcomes.

Grund, J. and M. W. Stomberg "Patients' expectations of the health advice conversation with the diabetes nurse practitioner." J Prim Care Community Health. 2012 Oct 1;3(4):230-4. doi: 10.1177/2150131911435263. Epub 2012 Feb 11.

Type 2-diabetes usually makes its first appearance in adult age. In order for patients to feel in control of the disease, they need support and information that can easily be understood and which is

relevant for the individual. By educating and supporting them, patients can conduct self-care and take control. The aim of this study was to highlight the expectations that patients with type 2-diabetes have of the health advice conversation with the nurse practitioner. A qualitative method using interviews was conducted and the data material was analysed according to manifest and latent content analysis. Three categories emerged in the results. Firstly, providing good accessibility to the diabetes nurse practitioner is of importance. Secondly, there is a demand for group activities in which patients have the opportunity to talk with other individuals who have diabetes. Finally, knowledge about self-care means that the patients themselves are able to change the intake of medication, their eating habits, and exercise according to need, as this leads to increased independence and self-management. The latent content demonstrates that the patient is striving towards competence and self-confidence in order to achieve a balance between lifestyle and the normalisation of blood sugar levels, which means empowerment. In addition, the informants expressed a demand for group activities where they can discuss the disease with others in the same situation. A combination of knowledge about the disease, receiving individual advice, and participation in groups can be beneficial in order to motivate the informants about lifestyle changes and to gain the ability to manage the disease.

Guldberg, T. L., P. Vedsted, et al. "Suboptimal quality of type 2 diabetes care discovered through electronic feedback led to increased nurse-GP cooperation. A qualitative study." Prim Care Diabetes. 2010 Apr;4(1):33-9. doi: 10.1016/j.pcd.2010.01.001. Epub 2010 Jan 21.

AIM: To understand the influence of electronic feedback system (EFS) on providing type 2 diabetes care in general practice using a qualitative approach embedded in a randomized controlled trial. METHOD: All 160 general practitioners (GPs) randomized to receive EFS were invited. Thirteen GPs from two solo and two partnership practices were interviewed about their experience with the EFS which provided data on the quality of diabetes care in their practices. Data was analysed using a qualitative descriptive approach. RESULTS: All participants found the insight into the overall quality of their diabetes care beneficial. While the two solo practices reported of no changes, the EFS catalysed organisational changes in the two partnership practices by allocating a number of diabetes controls to nurses. Limited time and a lack of real-time data were main barriers towards using the system. CONCLUSION: EFS used at an overall level provided an overview of the diabetes population which made GPs aware of the need to improve the quality of diabetes care. The EFS influenced partnership practices, but not solo practices, to hire nurses and allocate parts of diabetes care to them. The findings are important in the interpretation of the effect of EFS.

Handley, M. A., M. Shumway, et al. "Cost-effectiveness of automated telephone self-management support with nurse care management among patients with diabetes." Ann Fam Med. 2008 Nov-Dec;6(6):512-8. doi: 10.1370/afm.889.

PURPOSE: This study evaluated the cost-effectiveness of an automated telephone self-management support with nurse care management (ATSM) intervention for patients with type 2 diabetes, which was tested among patients receiving primary care in publicly funded (safety net) clinics, focusing on non-English speakers. METHODS: We performed cost analyses in the context of a randomized trial among primary care patients comparing the effects of ATSM (n = 112) and usual care (n = 114) on diabetes-related outcomes in 4 San Francisco safety net clinics. ATSM uses interactive phone technology to provide surveillance, patient education, and one-on-one counseling, and was implemented in 3 languages for a 9-month period. Cost utility was examined using quality-adjusted life-years (QALYs) derived from changes in scores on the 12-Item Short Form Health Survey. We also examined cost-effectiveness for costs associated with a 10% increase in the proportion of patients meeting diabetes-specific public health goals for increasing exercise, as recommended by Healthy People 2010 and the American Diabetes Association. RESULTS: The annual cost of the ATSM intervention per QALY gained, relative to usual care, was $65,167 for start-up and ongoing implementation costs combined, and $32,333 for ongoing implementation costs alone. In sensitivity analyses, costs per QALY ranged from $29,402 to $72,407. The per-patient cost to achieve a 10% increase in the proportion of intervention patients meeting American Diabetes Association exercise guidelines was estimated to be $558 when all costs were considered and $277 when only ongoing costs were considered. CONCLUSIONS: The ATSM intervention for diverse patients with diabetes had a cost utility for functional outcomes similar to that of many other accepted interventions targeted at diabetes prevention and treatment, and achieved public health physical activity objectives at modest costs. Because a considerable proportion of costs were fixed, cost-utility and cost-effectiveness estimates would likely be substantially improved in a scaled-up ATSM program.

Hardeman, W., L. Lamming, et al. "Implementation of a nurse-led behaviour change intervention to support

medication taking in type 2 diabetes: beyond hypothesised active ingredients (SAMS Consultation Study)." Implement Sci. 2014 Jun 5;9:70. doi: 10.1186/1748-5908-9-70.

BACKGROUND: Implementation of trial interventions is rarely assessed, despite its effects on findings. We assessed the implementation of a nurse-led intervention to facilitate medication adherence in type 2 diabetes (SAMS) in a trial against standard care in general practice. The intervention increased adherence, but not through the hypothesised psychological mechanism. This study aimed to develop a reliable coding frame for tape-recorded consultations, assessing both a priori hypothesised and potential active ingredients observed during implementation, and to describe the delivery and receipt of intervention and standard care components to understand how the intervention might have worked. METHODS: 211 patients were randomised to intervention or comparison groups and 194/211 consultations were tape-recorded. Practice nurses delivered standard care to all patients and motivational and action planning (implementation intention) techniques to intervention patients only. The coding frame was developed and piloted iteratively on selected tape recordings until a priori reliability thresholds were achieved. All tape-recorded consultations were coded and a random subsample double-coded. RESULTS: Nurse communication, nurse-patient relationship and patient responses were identified as potential active ingredients over and above the a priori hypothesised techniques. The coding frame proved reliable. Intervention and standard care were clearly differentiated. Nurse protocol adherence was good (M (SD) = 3.95 (0.91)) and competence of intervention delivery moderate (M (SD) = 3.15 (1.01)). Nurses frequently reinforced positive beliefs about taking medication (e.g., 65% for advantages) but rarely prompted problem solving of negative beliefs (e.g., 21% for barriers). Patients' action plans were virtually identical to current routines. Nurses showed significantly less patient-centred communication with the intervention than comparison group. CONCLUSIONS: It is feasible to reliably assess the implementation of behaviour change interventions in clinical practice. The main study results could not be explained by poor delivery of motivational and action planning components, definition of new action plans, improved problem solving or patient-centred communication. Possible mechanisms of increased medication adherence include spending more time discussing it and mental rehearsal of successful performance of current routines, combined with action planning. Delivery of a new behaviour change intervention may lead to less patient-centred communication and possible reduction in overall trial effects. TRIAL REGISTRATION: ISRCTN30522359.

Heisler, M., S. Vijan, et al. "Diabetes control with reciprocal peer support versus nurse care management: a randomized trial." Ann Intern Med. 2010 Oct 19;153(8):507-15. doi: 10.7326/0003-4819-153-8-201010190-00007.

BACKGROUND: Resource barriers complicate diabetes care management. Support from peers may help patients manage their diabetes. OBJECTIVE: To compare a reciprocal peer-support (RPS) program with nurse care management (NCM). DESIGN: Randomized, controlled trial. (ClinicalTrials.gov registration number: NCT00320112) SETTING: 2 U.S. Department of Veterans Affairs health care facilities. PATIENTS: 244 men with hemoglobin A(1c) (HbA(1c)) levels greater than 7.5% during the previous 6 months. MEASUREMENTS: The primary outcome was 6-month change in HbA(1c) level. Secondary outcomes were changes in insulin therapy; blood pressure; and patient reports of medication adherence, diabetes-related support, and emotional distress. INTERVENTION: Patients in the RPS group attended an initial group session to set diabetes-related behavioral goals, receive peer communication skills training, and be paired with another age-matched peer patient. Peers were encouraged to talk weekly using a telephone platform that recorded call occurrence and provided reminders to promote peer contact. These patients could also participate in optional group sessions at 1, 3, and 6 months. Patients in the NCM group attended a 1.5-hour educational session and were assigned to a nurse care manager. RESULTS: Of the 244 patients enrolled, 216 (89%) completed the HbA(1c) assessments and 231 (95%) completed the survey assessments at 6 months. Mean HbA(1c) level decreased from 8.02% to 7.73% (change, -0.29%) in the RPS group and increased from 7.93% to 8.22% (change, 0.29%) in the NCM group. The difference in HbA(1c) change between groups was 0.58% (P = 0.004). Among patients with a baseline HbA(1c) level greater than 8.0%, those in the RPS group had a mean decrease of 0.88%, compared with a 0.07% decrease among those in the NCM group (between-group difference, 0.81%; P < 0.001). Eight patients in the RPS group started insulin therapy, compared with 1 patient in the NCM group (P = 0.020). Groups did not differ in blood pressure, self-reported medication adherence, or diabetes-specific distress, but the RPS group reported improvement in diabetes social support. LIMITATION: The study included only male veterans and lasted only 6 months. CONCLUSION: Reciprocal peer support holds promise as a method for diabetes care management.

Herrin, J., D. A. Nicewander, et al. "Effectiveness of diabetes resource nurse case management and physician profiling in a fee-for-service setting: a cluster randomized trial." Proc (Bayl Univ Med Cent). 2006 Apr;19(2):95-102.

Nurses with advanced training-diabetes resource nurses (DRNs)-can improve care for people with diabetes in capitated payment settings. Their effectiveness in fee-for-service settings has not been investigated. We conducted a 12-month practice-randomized trial involving 22 practices in a fee-for-service metropolitan network with 92 primary care physicians caring for 1891 Medicare patients >/=65 years with diabetes mellitus. Each practice was randomized to one of three intervention groups: physician feedback on process measures using Medicare claims data; Medicare claims feedback plus feedback on clinical measures from medical record (MR) abstraction; or both types of feedback plus a practice-based DRN. The primary endpoint investigated was hemoglobin A(1c) level. Other measures were low-density lipoprotein (LDL) cholesterol level, blood pressure, annual hemoglobin A(1c) testing, annual LDL screening, annual eye exam, annual foot exam, and annual renal assessment. Data were collected from medical chart abstraction and Medicare claims. The number of patients with hemoglobin A(1c) <9% increased by 4 (0.9%) in the Claims group; 9 (2.1%) in the Claims + MR group (comparison with Claims: P = 0.97); and 16 (3.8%) in the DRN group (comparison with Claims: P = 0.31). Results were similar for the other clinical outcomes, with no differences significant at P = 0.10. For process of care measures, decreases were seen in all groups, with no significant differences in change scores. Quality improvement strategies must be evaluated in the appropriate setting. Initiatives that have been effective in capitated systems may not be effective in fee-for-service environments.

Hiss, R. G., B. A. Armbruster, et al. "Nurse care manager collaboration with community-based physicians providing diabetes care: a randomized controlled trial." Diabetes Educ. 2007 May-Jun;33(3):493-502.

PURPOSE: The purpose of this study was to demonstrate the potential value of close collaboration at the office level of a nurse care manager with community-based primary care physicians in the care of adult patients with type 2 diabetes, particularly those physicians not affiliated with an integrated care system that some managed care organizations provide. METHODS: Patients with type 2 diabetes were recruited from the general population of a large metropolitan area. Each received a comprehensive evaluation of his or her diabetes with results reported to patients and their physicians (basic intervention). A random one-half of patients were additionally assigned to individual counseling, problem identification, care planning, and management recommendations by a nurse care manager (individualized intervention). The patients receiving only the basic intervention served as the control group to those receiving the individualized intervention. Re-evaluation of all patients at 6 months after their entry into the study determined the effectiveness of the nurse-directed individualized intervention using A1C, blood pressure, and cholesterol as outcome measures. RESULTS: Of 220 patients recruited, 197 had type 2 diabetes, randomly assigned only the basic intervention (102 patients) or individualized intervention (95 patients). Postintervention data were obtained on 164 patients (83%). Significant improvement occurred in mean systolic blood pressure and A1C of all patients in the individualized but not the basic intervention only group. Patients with a systolic blood pressure>or=130 mm Hg at baseline showed improvement if they had more than 2 contacts with the study nurse but not if they had less than 2 contacts. CONCLUSIONS: A nurse care manager collaborating at the office level with community-based primary care physicians can enhance the care provided to adult patients with type 2 diabetes. For those many physicians not affiliated with an integrated care system featured by some managed care organizations, this collaboration could underlie a team approach (nurse/patient/physician) for the ambulatory patient with diabetes that would be an essential element in a chronic disease model of care for diabetes at the community level.

Houweling, S. T., N. Kleefstra, et al. "Diabetes specialist nurse as main care provider for patients with type 2 diabetes." Neth J Med. 2009 Jul-Aug;67(7):279-84.

BACKGROUND: The objective of this study was to determine whether the management of type 2 diabetes (DM2) can be transferred from an internist to a nurse specialised in diabetes (NSD). METHODS: Ninety-three patients with DM2 referred by their general practitioner were randomised; 84 patients completed the study. The intervention group received care from an NSD who treated glycaemia, blood pressure and lipid profile by protocol. The control group received care from an internist. The primary endpoint was the main decrease in HbA1c. Secondary endpoints included blood pressure, lipid profile, healthcare costs, QOL , and patient satisfaction. RESULTS: HbA1c, total cholesterol, LDL cholesterol and cholesterol/HDL ratio decreased significantly in both study populations after a follow-up time of 12 months. Cholesterol/HDL ratio decreased by 0.4 and

0.9 in the NSD and control group respectively (p=0.034 for the difference between groups). The decreases (95% confidence interval) in systolic blood pressure were 8.6 mmHg (2.6, 14.7) in the NSD group and 4.0 mmHg (-0.9, 8.9) in the control group, without a significant difference between groups. After one year, 33.3% of the patients in the NSD group achieved an HbA1c level. <7% compared with 2.2%at baseline (p=0.002). Healthcare costs were less and patient satisfaction with the NSD s was significantly better(p<0.001), while maintaining the same QOL . CONCLUSION: NSD s using treatment protocols are able to provide effective care for patients with DM 2, comparable with the care provided by an internist, with respect to clinical parameters, and superior with respect to healthcare costs and patient satisfaction.

Ishani, A., N. Greer, et al. "Effect of nurse case management compared with usual care on controlling cardiovascular risk factors in patients with diabetes: a randomized controlled trial." Diabetes Care. 2011 Aug;34(8):1689-94. doi: 10.2337/dc10-2121. Epub 2011 Jun 2.

OBJECTIVE: To determine whether nurse case management with a therapeutic algorithm could effectively improve rates of control for hypertension, hyperglycemia, and hyperlipidemia compared with usual care among veterans with diabetes. RESEARCH DESIGN AND METHODS: A randomized controlled trial of diabetic patients that had blood pressure (BP) >140/90 mmHg, hemoglobin A(1c) (HbA(1c)) >9.0%, or LDL >100 mg/dL. Intervention patients received case management (n = 278) versus usual care (n = 278) over a 1-year period. The primary outcome was the percentage of patients achieving simultaneous control of all three parameters (defined by BP <130/80 mmHg, HbA(1c) <8.0%, and LDL <100 mg/dL) at 1 year. Secondary outcomes included improvements within each individual component of the composite primary outcome. Differences between groups were analyzed using t tests, Pearson chi(2) tests, and linear and logistic regression. RESULTS: A greater number of individuals assigned to case management achieved the primary study outcome of having all three outcome measures under control (61 [21.9%] compared with 28 [10.1%] in the usual care group [P < 0.01]). In addition, a greater number of individuals assigned to the intervention group achieved the individual treatment goals of HbA(1c) <8.0% (73.7 vs. 65.8%, P = 0.04) and BP <130/80 mmHg (45.0 vs. 25.4%, P < 0.01), but not for LDL <100 mg/dL (57.6 vs. 55.4%, P = 0.61), compared with those in the usual care group. CONCLUSIONS: In patients with diabetes, nurse case managers using a treatment algorithm can effectively improve the number of individuals with control of multiple cardiovascular risk factors at 1 year.

Jansink, R., J. Braspenning, et al. "Nurse-led motivational interviewing to change the lifestyle of patients with type 2 diabetes (MILD-project): protocol for a cluster, randomized, controlled trial on implementing lifestyle recommendations." BMC Health Serv Res. 2009 Jan 30;9:19. doi: 10.1186/1472-6963-9-19.

BACKGROUND: The diabetes of many patients is managed in general practice; healthcare providers aim to promote healthful behaviors, such as healthful diet, adequate physical activity, and smoking cessation. These measures may decrease insulin resistance, improve glycemic control, lipid abnormalities, and hypertension. They may also prevent cardiovascular disease and complications of diabetes. However, professionals do not adhere optimally to guidelines for lifestyle counseling. Motivational interviewing to change the lifestyle of patients with type 2 diabetes is intended to improve diabetes care in accordance with the national guidelines for lifestyle counseling. Primary care nurses will be trained in motivational interviewing embedded in structured care in general practice. The aim of this paper is to describe the design and methods of a study evaluating the effects of the nurses' training on patient outcomes. METHODS/DESIGN: A cluster, randomized, controlled trial involving 70 general practices (35 practices in the intervention arm and 35 in the control arm) starting in March 2007. A total of 700 patients with type 2 diabetes will be recruited. The patients in the intervention arm will receive care from the primary care nurse, who will receive training in an implementation strategy with motivational interviewing as the core component. Other components of this strategy will be adaptation of the diabetes protocol to local circumstances, introduction of a social map for lifestyle support, and educational and supportive tools for sustaining motivational interviewing. The control arm will be encouraged to maintain usual care. The effect measures will be the care process, metabolic parameters (glycosylated hemoglobin, blood pressure and lipids), lifestyle (diet, physical activity, smoking, and alcohol), health-related quality of life, and patients' willingness to change behaviors. The measurements will take place at baseline and after 14 months. DISCUSSION: Applying motivational interviewing for patients with diabetes in primary care has been studied, but to our knowledge, no other study has yet evaluated the implementation and sustainability of motivating and involving patients in day-to-day diabetes care in general practice. If this intervention proves to be effective and cost-effective, large-scale

implementation of this nurse-oriented intervention will be considered and anticipated. TRIAL REGISTRATION: Current Controlled Trials ISRCTN68707773.

Jessee, B. T. and C. M. Rutledge "Effectiveness of nurse practitioner coordinated team group visits for type 2 diabetes in medically underserved Appalachia." J Am Acad Nurse Pract. 2012 Dec;24(12):735-43. doi: 10.1111/j.1745-7599.2012.00764.x. Epub 2012 Aug 13.

PURPOSE: To study the effectiveness of multidisciplinary nurse practitioner coordinated team (NPCT) group visits in medically underserved Appalachia on the health, knowledge, and self-efficacy of patients with type 2 diabetes (DM). The study also identified perceived barriers to participating in the diabetes programs. DATA SOURCES: A researcher-developed tool was used to assess demographic data, clinical data, and barriers to care. The participants completed the Diabetes Knowledge Tests and the Diabetes Empowerment Scales. Two groups were assessed. One group participated in the diabetes intervention, and the other received usual care. Both groups completed the instruments prior to the intervention and after the intervention was completed. CONCLUSIONS: The group that participated in the intervention had better clinical outcomes (blood glucose and A1Cs), greater knowledge, and better self-efficacy following the intervention than the usual care groups. This suggests that the intervention was important in improving outcomes of patients with type 2 DM. Barriers to care included fuel, time, family, work, and transportation. Barriers need to be addressed in order to have more patients participate in such programs. IMPLICATIONS FOR PRACTICE: NPCT group visits may represent an effective means of integrating diabetes self-management education and medical management in a family practice clinic in medically underserved areas.

Jones, S. L. "Diabetes Case Management in Primary Care: The New Brunswick Experience and Expanding the Practice of the Certified Diabetes Educator Nurse into Primary Care." Can J Diabetes. 2015 Aug;39(4):322-4. doi: 10.1016/j.jcjd.2014.12.006. Epub 2015 Mar 19.

The role of the outreach diabetes case manager in New Brunswick, Canada, was first developed in the Moncton Area of Horizon Health Network in response to a physician-identified gap between patients' diagnoses of diabetes and their attendance at the local diabetes education centre. This model of collaborative interprofessional practice increases support for primary care providers and people living with diabetes in that they are being provided the services of certified diabetes educators who can address knowledge gaps with respect to evidence-based guidelines and best practice, promote advancement of diabetes and chronic-disease management therapies and support adherence to treatment plans and self-management practices. This report chronicles a review of the implementation, expansion and evaluation of the outreach diabetes case manager model in the province of New Brunswick, Canada, along with the rationale for development of the role for registered nurses in other jurisdictions.

Kahn, L. S., C. H. Fox, et al. "Telephonic nurse case management for patients with diabetes and mental illnesses: a qualitative perspective." Chronic Illn. 2009 Dec;5(4):257-67. doi: 10.1177/1742395309350229.

OBJECTIVES: Gold Choice, a partially capitated Medicaid managed care programme for individuals with a behavioural health diagnosis, implemented a telephonic nurse case management (TNCM) programme to improve diabetes self-management. We sought to identify issues faced by patients with co-morbid behavioural health diagnoses and diabetes as documented in the telephonic nurse case manager's progress notes. We also explored the role of the TNCM in addressing members' needs. METHODS: We undertook a qualitative analysis of 853 de-identified progress notes from 539 Gold Choice members and conducted a semi-structured interview with the TNCM. RESULTS: Seven major themes emerged reflecting the nurse's perspectives on challenges faced by Gold Choice members and addressed by the TNCM: (1) Transience of the population. (2) Complex needs, involving not only medical and psychiatric conditions but also housing, transportation and survival. (3) Confusion regarding diabetes diagnosis. (4) Mistrust and suspicion. (5) Difficulties with medical care. (6) Need for diabetes self-management education/skills. (7) Marked appreciation that the TNCM would initiate contact and care about the patient. DISCUSSION: Members with co-morbid behavioural health diagnoses and diabetes constitute a complex population with extensive needs. The TNCM's role extends beyond diabetes care and entails social support as well as navigation of the healthcare and social service systems.

Kawaguchi, T. "Certified diabetes expert nurse and nurse educators in Japan." Diabetes Res Clin Pract. 2007 Sep;77 Suppl 1:S205-7. Epub 2007 May 7.

The Japanese Certification Board for Diabetes Educator (JCBDE) was inaugurated on 29 February 2000 through the collaboration of the Japan Diabetes Society, Japan Society of Metabolism and Clinical Nutrition, and Japan Academy of Diabetes Education and Nursing. Certified Diabetes Educator of

Japan (CDEJ) is a qualification awarded to a nurse, dietitian, pharmacist, clinical laboratory technician, or physiotherapist possessing wide specialist knowledge on diabetes. CDEJ have passed the required examinations and approved by the board. CDEJ have worked continuously for at least 2 years in medical institutions, and have engaged in duties related to education of diabetic patients for at least 1000 h. In Japan, a qualification similar to certified diabetes educator is the "Certified Expert Nurse (CEN) in diabetic nursing". A certified expert nurse is a qualification awarded by the Japanese Nursing Association. Nurses who have received 6 months training in an accredited training institution and passed certification examinations after graduating from the training are awarded the qualification of CEN. CEN have at least 5 years of practical nursing experience and at least 3 years experience in diabetic nursing. There are already 11,778 certified diabetes educators, 5753 of whom are nurses, and 87 certified expert nurses in Japan.

Kenealy, T., B. Arroll, et al. "Diabetes care: practice nurse roles, attitudes and concerns." J Adv Nurs. 2004 Oct;48(1):68-75.

BACKGROUND: Practice nurses (PNs) are the largest group of nurses providing primary care for patients with diabetes in New Zealand, and changes in the health system are likely to have a substantial effect on their roles. To inform the development of a new primary health care nursing structure and evaluate the new role associated with this, it will be important to have data on current practice nurse roles. AIMS: The aim of this paper is to report a study to compare the diabetes-related work roles, training and attitudes of practice nurses in New Zealand surveyed in 1990 and 1999, to consider whether barriers to practice nurse diabetes care changed through that decade, and whether ongoing barriers will be addressed by current changes in primary care. METHODS: Questionnaires were mailed to all 146 PNs in South Auckland in 1990 and to all 180 in 1999, asking about personal and practice descriptions, practice organization, time spent with patients with diabetes, screening practices, components of care undertaken by practice nurses, difficulties and barriers to good practice, training in diabetes and need for further education. The 1999 questionnaire also asked about nurse prescribing and influence on patient quality of life. RESULTS: More nurses surveyed in 1999 had postregistration diabetes training than those in 1990, although most of those surveyed in both years wanted further training. In 1999, nurses looked after more patients with diabetes, without spending more time on diabetes care than nurses in 1990. Nevertheless, they reported increased involvement in the more complex areas of diabetes care. Respondents in 1999 were no more likely than those in 1990 to adjust treatment, and gave a full range of opinion for and against proposals to allow nurse prescribing. The relatively low response rate to the 1990 survey may lead to an underestimate of changes between 1990 and 1999. CONCLUSIONS: Developments in New Zealand primary care are likely to increase the role of primary health care nurses in diabetes. Research and evaluation is required to ascertain whether this increasing role translates into improved outcomes for patients.

Labhardt, N. D., J. R. Balo, et al. "Improved retention rates with low-cost interventions in hypertension and diabetes management in a rural African environment of nurse-led care: a cluster-randomised trial." Trop Med Int Health. 2011 Oct;16(10):1276-84. doi: 10.1111/j.1365-3156.2011.02827.x. Epub 2011 Jul 6.

OBJECTIVE: To compare the effects of low-level facility-based interventions on patient retention rates for cardiovascular (CV) disease in an environment of task shifting and nurse-led care in rural health districts in Central Cameroon. METHODS: This study is an open-label, three-arm, cluster-randomised trial in nurse-led facilities. All three groups implemented a treatment contract. The control group (group 1) had no additional intervention, group 2 received the incentive of 1 month of free treatment every forth month of regularly respected visits, and group 3 received reminder letters in case of a missed follow-up visit. The primary outcome was patient retention at 1 year. Secondary outcomes were adherence to follow-up visit schemes and changes in blood pressure (BP) and blood glucose levels. Patients' monthly spending for drugs and transport was calculated retrospectively. RESULTS: A total of 33 centres and 221 patients were included. After 1 year, 109 patients (49.3%) remained in the programme. Retention rates in groups 2 and 3 were 60% and 65%, respectively, against 29% in the control group. The differences between the intervention groups and the control group were significant ($P < 0.001$), but differences between the two intervention groups were not ($P = 0.719$). There were no significant differences in BP or fasting plasma glucose trends between retained patients in the study groups. Average monthly cost to patients for antihypertensive medication was euro 1.1 +/- 0.9 and for diabetics euro1.2 +/- 1.1. Transport costs to the centres were on average euro1.1 +/- 1.0 for hypertensive patients and euro1.1 +/- 1.6 for patients with diabetes. CONCLUSIONS: Low-cost interventions suited to an environment of task shifting and nurse-led care and needing minimal additional resources can significantly improve retention rates in CV disease management in rural Africa. The combination of a treatment contract and reminder

letters in case of missed appointments was an effective measure to retain patients in care.

Lamers, F., C. C. Jonkers, et al. "Treating depression in diabetes patients: does a nurse-administered minimal psychological intervention affect diabetes-specific quality of life and glycaemic control? A randomized controlled trial." J Adv Nurs. 2011 Apr;67(4):788-99. doi: 10.1111/j.1365-2648.2010.05540.x. Epub 2011 Jan 12.

AIMS: The aim of this study was to examine whether a nurse-administered minimal psychological intervention for depressive symptoms improves diabetes-specific quality of life and glycaemic control in older persons with diabetes. BACKGROUND: Depression is common among persons with diabetes and may have a negative impact on diabetes. Interventions aimed at reducing depressive symptoms may positively influence diabetes-specific quality of life as well. METHODS: A pragmatic, randomized controlled trial was carried out comparing the intervention with usual care among 208 Dutch primary care patients of >/=60 years with type 2 diabetes and co-occurring minor to moderate depression. Data on symptom distress and emotional distress were collected during 2003-2006, and haemoglobin A1c levels were obtained from general practices. Data were analysed using mixed model, repeated measures ANCOVAS. Hba1c was collected retrospectively from general practices between December 2006-February 2007. In July 2007 we retrieved some additional HbA1c data from the medical records of the university hospital. RESULTS: Only in higher-educated persons did the intervention have statistically significant effect on both emotional distress and symptom distress (DSC-R total score at 9 months P=0.001; PAID, 9 months P=0.03). Furthermore, we found an effect on symptom distress in men (9 months P=0.01), and on emotional distress in persons with a shorter diabetes duration (<7 years) (9 months P=0.04). A significant trend over time for haemoglobin A1c was found in favour of the intervention, with a statistically significant difference between groups after 9 months (P=0.02). CONCLUSION: The nurse-administered intervention had limited effects on diabetes-specific quality of life. As only certain subgroups benefited, ways of increasing effectiveness in other groups should be explored. The potentially beneficial effect on glycaemic control is encouraging and needs further research because of small numbers in the analysis.

Latter, S., A. Sibley, et al. "The impact of an intervention for nurse prescribers on consultations to promote patient medicine-taking in diabetes: a mixed methods study." Int J Nurs Stud. 2010 Sep;47(9):1126-38. doi: 10.1016/j.ijnurstu.2010.02.004. Epub 2010 Mar 7.

BACKGROUND: Nurse prescribers are in a key position to promote medicine-taking in diabetes. Although patients' beliefs about medicines are important predictors of medicine-taking, evidence suggests nurses do not routinely explore these. OBJECTIVES: To evaluate a theory-based intervention designed to increase nurse prescribers' exploration of medicines' beliefs with people with diabetes. DESIGN: Mixed methods concurrent triangulation design. SETTINGS: Nurse prescribers were recruited from 7 Trusts in England. PARTICIPANTS: A purposive sample of 14 nurse prescribers attended four 1 day workshops. METHODS: Audio-recordings of each nurse prescribers' consultations with diabetes patients were collected at baseline, 1 week, 3 months and 6 months after the intervention. Nurse prescribers were interviewed at 1 month and 6 months post-intervention. Changes in medicines' discussion and participation in consultations were analysed using MEDICODE. Interview data were analysed using Framework Analysis. RESULTS: MEDICODE themes of 'attitudes towards medication' showed a significant rise at 1 week ($p<0.01$) and 3 months ($p<0.05$). 'Asks patient opinion about medication' significantly increased at 1 week ($p<0.01$). Discussion on 'concerns about medication' rose significantly at 1 week ($p<0.001$) and 6 months ($p<0.01$). Discussion on 'expected effects of medication', 'action of medication' and 'reasons for medication' showed no change. There were no significant changes in Dialogue Ratio. However, the Preponderance of Initiative moved towards more patient initiative at 1 week ($p<0.0001$), 3 months ($p<0.0001$), and 6 months ($p<0.0001$). In interviews, nurses reported increased attention to patients' medication beliefs and adoption of patient-centred skills. Contextual factors that positively influenced ability to explore medicines beliefs in practice settings were: support of colleagues and practicing new skills. Inhibiting factors included: patients' perceived lack of receptivity, time constraints, and concerns about opening a 'can of worms'. Six months interviews revealed using skills in practice enhanced nurses' confidence and sustainability of skills requires a nurse-patient relationship. Method triangulation illuminated how the intervention was implemented in practice contexts. CONCLUSIONS: The intervention was effective at changing some key dimensions of prescribing consultations. The use of a self-efficacy framework in the intervention, to promote nurses' confidence in working in a different way, may have been instrumental in effecting the changes found. Contextual factors influencing beliefs exploration in medicine-taking consultations were identified.

Lawson, M. L., N. Cohen, et al. "A randomized trial of regular standardized telephone contact by a diabetes nurse educator in adolescents with poor diabetes control." Pediatr Diabetes. 2005 Mar;6(1):32-40.

OBJECTIVE: The aim of this study was to determine the effect of regular standardized telephone contact by a diabetes nurse educator (DNE) on metabolic control, treatment compliance, and quality of life in adolescents with poorly controlled type 1 diabetes. METHODS: A single-blinded 6-month randomized controlled trial was used. Participants included 46 of 49 eligible adolescents (13-17 yr) with type 1 diabetes >1-yr duration and hemoglobin A1c (HbA1c) >8.5% for the previous 6 months. Subjects were randomly assigned to 6 months of standard diabetes management or standard care plus weekly telephone contact by a DNE. Telephone conversations included review of events in the adolescents' lives and diabetes education, but the primary focus was on blood glucose results and insulin-dose adjustments. HbA1c, compliance with glucose monitoring, quality of life [Diabetes Quality of Life Scale for Youth (DQOLY)], and family functioning [Family Environment Scale (FES)] were assessed at baseline, and at 3 and 6 months. Posthoc, HbA1c levels were assessed 6 months following study completion. RESULTS: Six months of regular telephone contact by a DNE had no immediate effect on any of the outcome measures. However, posthoc 6 months, HbA1c levels decreased (1% change compared to baseline) in 6/21 of the study group and 0/18 of the control group, while HbA1c increased in 4/21 of study subjects compared to 8/18 of control subjects ($p = 0.015$). CONCLUSIONS: In contrast to adult studies, regular telephone contact did not lead to immediate improvements in metabolic control in adolescents with poorly controlled type 1 diabetes. However, knowledge and skills gained during the intervention may have had a delayed beneficial effect in these high-risk adolescents.

Lew, K. N., D. J. Kent, et al. "Therapeutic options for lowering LDL-C in type 2 diabetes: a nurse practitioner's perspective." J Am Assoc Nurse Pract. 2013 Sep;25(9):488-94. doi: 10.1002/2327-6924.12053.

PURPOSE: The majority of patients with type 2 diabetes mellitus (T2DM) have multiple risk factors for cardiovascular disease (CVD). Low-density lipoprotein cholesterol (LDL-C) is a key therapeutic target to reduce CVD risk. This article reviews therapeutic strategies that nurse practitioners (NPs) may use in the management of patients with T2DM requiring lipid management. DATA SOURCES: The evidence used in developing this review included evidence-based reviews, clinical trials, guidelines, and consensus statements. Relevant publications were identified through a search of the literature using PubMed and other search engines. CONCLUSIONS: Lowering LDL-C levels may reduce CVD risk, but achieving goals can be challenging. Lifestyle modifications (including diet, exercise, and smoking cessation) are key components of lipid management and reduction of CVD risk. Statins can be effective to reduce lipids. However, patients may not achieve lipid goals with monotherapy or may experience intolerable adverse effects. Alternative statins or statins along with other lipid-lowering agents remain good options. IMPLICATIONS FOR PRACTICE: Achieving LDL-C goals requires a comprehensive treatment plan that incorporates lifestyle and pharmacologic interventions. Patient commitment in setting goals and self-management is essential. NPs can play an important role in educating patients as well as prescribing appropriate treatments.

Lipman, T. H., M. M. Schucker, et al. "Diabetes risk factors in children: a partnership between nurse practitioner and high school students." MCN Am J Matern Child Nurs. 2011 Jan-Feb;36(1):56-62. doi: 10.1097/NMC.0b013e3181fc0d06.

PURPOSE: This project was a 4-year university/community collaboration to (1) screen for diabetes risk factors in children from in an inner-city community; (2) assess children's knowledge of nutrition and measure their physical endurance; and (3) survey parents about barriers to healthy living. STUDY DESIGN AND METHODS: Descriptive cross-sectional study utilizing a community participatory-based research approach. For a 4-week period each year, nurse practitioner students and high school students partnered in an evaluation of elementary school children that included assessment of (1) height, weight, waist circumference, BMI, and acanthosis nigricans; (2) scores on a nutrition knowledge test; and (3) recovery heart rate after a dance activity. Parents of the children were surveyed regarding barriers to healthy eating and activity. RESULTS: A total of 240 African American children were evaluated: 25% were obese, 24% had a waist circumference >95th percentile, and 14% had acanthosis nigricans. The mean score of a nutrition knowledge test was 65%, and recovery heart rates were significantly higher than preexercise heart rates. Of 48 parents surveyed, the most common barrier to eating healthy reported was the children's picky eating (62%), and most common barrier to activity was lack of access to safe places to play (54%). CLINICAL IMPLICATIONS: Nurses working with children from inner-city communities should be especially aware of the children's many risk factors for diabetes. Clinicians who hope to make a difference in altering these risks

should collaborate with the community to target high-risk populations for diabetes screening, promote good nutrition and exercise, and address barriers to healthy living. When developing plans of care for children, regardless of setting, it is critical to understand the community and incorporate the families as partners in developing culturally relevant interventions.

Lopez-Pisa, R. M. and M. Prats-Guardiola "[Joint home follow-up of a patient with complicated diabetes mellitus by the case manager and the community nurse: II]." Enferm Clin. 2012 Jan-Feb;22(1):46-50. doi: 10.1016/j.enfcli.2010.12.005. Epub 2011 Aug 26.

This is a continuation of the article published in this journal (Enfermeria Clinica), entitled "Integral approach by the case manager and the community nurse to a complex case of diabetes mellitus in the home". We present the case of a 76 year- old patient with long-term and clinically complex Diabetes Mellitus. The patient was taking part in the Primary Care home care program. This article describes the follow-up of the case in which new complications appeared in the right limb, which led to the amputation of the second limb. A new evaluation following Virginia's Henderson model was performed six months after the initial care plan. Nursing diagnoses were made following the North American Nursing Diagnosis Association (NANDA). These diagnoses led to changes in objectives and performance criteria using, nursing outcomes classification (NOC) and nursing interventions classification (NIC). One of the results obtained was the improvement of her well-being by enabling the patient to interact and integrate socially within her environment after mobilising the corresponding social and family resources.Involvement in clinical practice is important in the prevention of diabetes mellitus and diabetic foot complications. Difficult and complex situations are sometimes beyond the ability of the community nurse. It can be beneficial to take advantage of the clinical support offered by the case management model and the integrated approach of a multidisciplinary team.

Macdonald, L., M. Stubbe, et al. "Nurse-patient communication in primary care diabetes management: an exploratory study." BMC Nurs. 2013 Sep 13;12(1):20. doi: 10.1186/1472-6955-12-20.

BACKGROUND: Diabetes is a major health issue for individuals and for health services. There is a considerable literature on the management of diabetes and also on communication in primary care consultations. However, few studies combine these two topics and specifically in relation to nurse communication. This paper describes the nature of nurse-patient communication in diabetes management. METHODS: Thirty-five primary health care consultations involving 18 patients and 10 nurses were video-recorded as part of a larger multi-site study tracking health care interactions between health professionals and patients who were newly diagnosed with Type 2 diabetes. Patients and nurses were interviewed separately at the end of the 6-month study period and asked to describe their experience of managing diabetes. The analysis used ethnography and interaction analysis.In addition to analysis of the recorded consultations and interviews, the number of consultations for each patient and total time spent with nurses and other health professionals were quantified and compared. RESULTS: This study showed that initial consultations with nurses often incorporated completion of extensive checklists, physical examination, referral to other health professionals and distribution of written material, and were typically longer than consultations with other health professionals. The consultations were driven more by the nurses' clinical agenda than by what the patient already knew or wanted to know. Interactional analysis showed that protocols and checklists both help and hinder the communication process. This contradictory outcome was also evident at a health systems level: although organisational targets may have been met, the patient did not always feel that their priorities were attended to. Both nurses and patients reported a sense of being overwhelmed arising from the sheer volume of information exchanged along with a mismatch in expectations. CONCLUSIONS: Conscientious nursing work was evident but at times misdirected in terms of optimal use of time. The misalignment of patient expectations and clinical protocols highlights a common dilemma in clinical practice and raises questions about the best ways to balance the needs of individuals with the needs of a health system. Video- recording can be a powerful tool for reflection and peer review.

Mackey, P. A., M. E. Boyle, et al. "Care directed by a specialty-trained nurse practioner or physician assistant can overcome clinical inertia in management of inpatient diabetes." Endocr Pract. 2014 Feb;20(2):112-9. doi: 10.4158/EP13201.OR.

OBJECTIVE: The study's objective was to determine the impact of care directed by a specialty-trained nurse practitioner (NP) or physician assistant (PA) on use of basal-bolus insulin therapy and glycemic control in a population of noncritically ill patients with diabetes. METHODS: A retrospective review of diabetes patients evaluated between July 1, 2011 and December 31, 2011 was conducted. Patients cotreated by a specialty-trained NP/PA were compared with patients who did not receive such care. RESULTS: In total, 171 patients with 222 hospitalizations were cotreated by an NP/PA and 543

patients with 665 hospitalizations were not. Patients with NP/PA involvement were younger, and had more frequent hyperglycemia, and had greater corticosteroid use than patients without NP/PA involvement (P<.01 for all). Basal-bolus insulin therapy was administered to 80% of patients with NP/PA involvement and 34% of patients without it (P<.01). After adjustment for age, sex, hyperglycemia measures, and corticosteroid use, the odds of basal-bolus insulin therapy being administered were increased significantly through NP/PA care (odds ratio, 3.66; 95% confidence interval, 2.36-5.67; P<.01). After adjustment for these variables and insulin regimen, NP/PA care was significantly correlated with lower mean point-of-care glucose levels at 24 hours before discharge (P = .042). CONCLUSION: Diabetes care assisted by an NP/PA trained in inpatient diabetes management results in greater use of recommended basal-bolus insulin therapy and is correlated with lower mean glucose levels before discharge. Adapting this model for use outside an endocrinology consult service needs to be explored so that the expertise can be brought to a broader inpatient population with diabetes.

Maissi, E., K. Ridge, et al. "Nurse-led psychological interventions to improve diabetes control: assessing competencies." Patient Educ Couns. 2011 Aug;84(2):e37-43. doi: 10.1016/j.pec.2010.07.036. Epub 2010 Aug 30.

OBJECTIVE: To assess whether medical nurses can deliver motivational enhancement therapy (MET) and cognitive behavioural therapy (CBT) to a competent level and whether treatment fidelity is maintained. METHODS: Training consisted of classroom teaching, written materials, a training caseload, and audio-visual feedback. We used the Motivational Interviewing Treatment Integrity (MITI), the Revised 12-item Cognitive Therapy Scale (CTS-R), and components of the Motivational Interviewing Skill Code (MISC) to assess competency and treatment fidelity. Two independent clinical psychologists who were blind to the allocation rated a random selection of 40 sessions. RESULTS: Six nurses were trained in both interventions. For the MET the mean (SD) scores for empathy and spirit on the MITI scale were 5.1 (0.7) and 4.6 (1.0) respectively and for CBT the total mean (SD) CTS-R score was 52.1 (7.5), which was acceptable competency in both treatments. The two interventions were distinguishable. CONCLUSION: Results suggest that nurses can be trained to deliver diabetes-specific MET and CBT competently and maintain treatment fidelity. PRACTICE IMPLICATIONS: Findings of this study provide preliminary evidence to suggest that nurse-led psychological interventions could be incorporated into the traditional diabetes setting.

Malasanos, T. H., B. D. Patel, et al. "School nurse, family and provider connectivity in the FITE diabetes project." J Telemed Telecare. 2005;11 Suppl 1:76-8.

The Florida Initiative in Telehealth and Education (FITE) diabetes project includes a system of remote blood glucose monitoring and online education for school personnel, families and providers. Forty-four patients with diabetes (100% of patients), six caregivers, six case managers and 18 school nurses were provided with secure email access, allowing blood glucose and other data transfer. In all, 50% of school nurses and 100% of case managers completed educational modules on the FITE Website. Over 90% of patients and all school nurses received equipment for transmitting blood glucose data to their computers. The data were discussed during clinic appointments. Inclusion of previously unavailable data from school nurses contributed to fine-tuning the diabetes management regimen. Those patients, families and school nurses who chose to transmit blood glucose data and participate in online education expressed satisfaction with the technology, the process and the improved communication.

Manders, I. G., K. Stoecklein, et al. "Shift in responsibilities in diabetes care: the Nurse-Driven Diabetes In-Hospital Treatment protocol (N-DIABIT)." Diabet Med. 2015 Aug 31. doi: 10.1111/dme.12899.

AIMS: To investigate the feasibility, safety and efficacy of the Nurse-Driven Diabetes In-Hospital Treatment protocol (N-DIABIT), which consists of nurse-driven correctional therapy, in addition to physician-guided basal therapy, and is carried out by trained ward nurses. METHODS: Data on 210 patients with diabetes consecutively admitted in the 5-month period after the introduction of N-DIABIT (intervention group) were compared with the retrospectively collected data on 200 consecutive patients with diabetes admitted in the 5-month period before N-DIABIT was introduced (control group). Additional per-protocol analyses were performed in patients in whom mean patient-based protocol adherence was >/= 70% (intervention subgroup, n = 173 vs. control subgroup, n = 196). RESULTS: There was no difference between the intervention and the control group in mean blood glucose levels (8.9 +/- 0.1 and 9.1 +/- 0.2 mmol/l, respectively; P = 0.38), consecutive hyperglycaemic (blood glucose >/= 10.0 mmol/l) episodes; P = 0.15), admission duration (P = 0.79), mean number of blood glucose measurements (P = 0.21) and incidence of severe hypoglycaemia (P = 0.29). Per-protocol analyses showed significant reductions in mean blood glucose levels and consecutive hypoglycaemia and hyperglycaemia in the

intervention compared with the control group. CONCLUSIONS: Implementation of N-DIABIT by trained ward nurses in non-intensive care unit diabetes care is feasible, safe and non-inferior to physician-driven care alone. High protocol adherence was associated with improved glycaemic control.

Marelli, G., F. Avanzini, et al. "Effectiveness of a nurse-managed protocol to prevent hypoglycemia in hospitalized patients with diabetes." J Diabetes Res. 2015;2015:173956. doi: 10.1155/2015/173956. Epub 2015 Apr 16.

BACKGROUND: Hypoglycemia due to inadequate carbohydrate intake is a frequent complication of insulin treatment of diabetic in-patients. Objective. To assess the effectiveness of a nurse-managed protocol to prevent hypoglycemia during subcutaneous insulin treatment. DESIGN: Prospective pre-post-intervention study. METHODS: In 350 consecutive diabetic in-patients the incidence of hypoglycemia (blood glucose < 70 mg/dL) during subcutaneous insulin treatment was assessed before (phase A) and after (phase B) the protocol was adopted to permit (1) the patient to opt for substitutive food to integrate incomplete carbohydrate intake in the meal; (2) in case of lack of appetite or repeatedly partial intake of the planned food, prandial insulin administered at the end of the meal to be related to the actual amount of carbohydrates eaten; (3) intravenous infusion of glucose during prolonged fasting. RESULTS: Eighty-four patients in phase A and 266 in phase B received subcutaneous insulin for median periods of, respectively, 7 (Q1-Q3 6-12) and 6 days (Q1-Q3 4-9). Hypoglycemic events declined significantly from 0.34 +/- 0.33 per day in phase A to 0.19 +/- 0.30 in phase B (P > 0.001). CONCLUSIONS: A nurse-managed protocol focusing on carbohydrate intake reduced the incidence of hypoglycemia in patients with diabetes receiving subcutaneous insulin in hospital.

Martinez, N. C. and T. Tripp-Reimer "Diabetes nurse educators' prioritized elder foot care behaviors." Diabetes Educ. 2005 Nov-Dec;31(6):858-68.

PURPOSE: The purpose of this study was to identify diabetes nurse educators' perceptions of the most important foot care behaviors for elderly people to enact in daily care. METHODS: A structured, open-ended questionnaire was mailed to a regionally stratified random sample of 90 diabetes nurse educators. Subjects were asked to identify and rank order 8 foot care behaviors perceived important for elderly people with diabetes to enact daily. Data were transcribed and coded into categories and domains using descriptive content analysis. RESULTS: Forty-seven diabetes nurse educators responded with a total of 346 foot care behaviors perceived important for elders. Twenty-one major foot care behavior content categories were grouped into 4 domains of descending importance: foot/nail care, footwear/shoes, general health, and foot emergencies. CONCLUSIONS: Diabetes nurse educators generated a range of baseline data for developing a reliable, valid, and patient foot care knowledge outcome measure to support national diabetes patient education and self-management program guidelines.

Mason, J. M., N. Freemantle, et al. "Specialist nurse-led clinics to improve control of hypertension and hyperlipidemia in diabetes: economic analysis of the SPLINT trial." Diabetes Care. 2005 Jan;28(1):40-6.

OBJECTIVE: To determine the cost-effectiveness of specialist nurse-led clinics provided to improve lipid and blood pressure control in diabetic patients receiving hospital-based care. RESEARCH DESIGN AND METHODS: A policy of targeting improved care through specialist nurse-led clinics is evaluated using a novel method, linking the cost-effectiveness of antihypertensive and lipid-lowering treatments with the cost and level of behavioral change achieved by the specialist nurse-led clinics. Treatment cost-effectiveness is modeled from the U.K. Prospective Diabetes Study and Heart Protection Study treatment trials, whereas specialist nurse-led clinics are evaluated using the Specialist Nurse-Led Clinics to Improve Control of Hypertension and Hyperlipidemia in Diabetes (SPLINT) trial. RESULTS: Good lipid and blood pressure control are cost-effective treatment goals for patients with diabetes. Modeling findings from treatment trials, blood pressure lowering is estimated to be cost saving and life prolonging (-1,400 dollars/quality-adjusted life-year [QALY]), whereas lipid-lowering is estimated to be highly cost-effective (8,230 dollars/QALY). Investing in nurse-led clinics to help achieve these benefits imposes an addition on treatment cost-effectiveness leading to higher estimates: 4,020 dollars/QALY and 19,950 dollars/QALY, respectively. For both clinics combined, the estimated cost-effectiveness is 9,070 dollars/QALY. Using an acceptability threshold of 50,000 dollars/QALY, the likelihood that blood pressure-lowering clinics are cost-effective is 77%, lipid clinics 99%, and combined clinics 83%. CONCLUSIONS: A method is described for evaluating the cost-effectiveness of policies to change patient uptake of health care. Such policies are less attractive than treatment cost-effectiveness (which implies cost-less self-implementation). However, specialist nurse-led clinics, as an adjunct to hospital-based diabetic care, combining both lipid and blood pressure control, appear effective and likely to provide excellent value for money.

McLean, D. L., F. A. McAlister, et al. "A randomized trial of the effect of community pharmacist and nurse care on improving blood pressure management in patients with diabetes mellitus: study of cardiovascular risk intervention by pharmacists-hypertension (SCRIP-HTN)." Arch Intern Med. 2008 Nov 24;168(21):2355-61. doi: 10.1001/archinte.168.21.2355.

BACKGROUND: Blood pressure (BP) control in patients with diabetes mellitus is difficult to achieve and current patterns are suboptimal. Given increasing problems with access to primary care physicians, community pharmacists and nurses are well positioned to identify and observe these patients. This study aimed to determine the efficacy of a community-based multidisciplinary intervention on BP control in patients with diabetes mellitus. METHODS: We performed a randomized controlled trial in 14 community pharmacies in Edmonton, Alberta, Canada, of patients with diabetes who had BPs higher than 130/80 mm Hg on 2 consecutive visits 2 weeks apart. Care from a pharmacist and nurse team included a wallet card with recorded BP measures, cardiovascular risk reduction education and counseling, a hypertension education pamphlet, referral to the patient's primary care physician for further assessment or management, a 1-page local opinion leader-endorsed evidence summary sent to the physician reinforcing the guideline recommendations for the treatment of hypertension and diabetes, and 4 follow-up visits throughout 6 months. Control-arm patients received a BP wallet card, a pamphlet on diabetes, general diabetes advice, and usual care by their physician. The primary outcome measure was the difference in change in systolic BP between the 2 groups at 6 months. RESULTS: A total of 227 eligible patients were randomized to intervention and control arms between May 5, 2005, and September 1, 2006. The mean (SD) patient age was 64.9 (12.1) years, 59.9% were male, and the mean (SD) baseline systolic/diastolic BP was 141.2 (13.9)/77.3 (8.9) mm Hg at baseline. The intervention group had an adjusted mean (SE) greater reduction in systolic BP at 6 months of 5.6 (2.1) mm Hg compared with controls (P = .008). In the subgroup of patients with a systolic BP greater than 160 mm Hg at baseline, BP was reduced by an adjusted mean (SE) of 24.1 (1.9) mm Hg more in intervention patients than in controls (P < .001). CONCLUSION: Even in patients who have diabetes and hypertension that are relatively well controlled, a pharmacist and nurse team-based intervention resulted in a clinically important improvement in BP. Trial Registration clinicaltrials.gov Identifier: NCT00374270.

Mendelson, S. G., D. McNeese-Smith, et al. "A community-based parish nurse intervention program for Mexican American women with gestational diabetes." J Obstet Gynecol Neonatal Nurs. 2008 Jul-Aug;37(4):415-25. doi: 10.1111/j.1552-6909.2008.00262.x.

OBJECTIVE: To examine the effects of a Parish Nurse Intervention Program (PNIP) on maternal health behaviors, glycemic control, and neonatal outcomes among Mexican American women with gestational diabetes. DESIGN: A randomized controlled trial comparing care as usual (CAU) with a supplementary 1-hour education session for diabetes education reinforcement by a Parish Nurse. SETTING: An outpatient treatment clinic for gestational diabetes within a 250-bed tertiary care, non-profit hospital with a Parish Nurse partnership. PARTICIPANTS: One hundred Mexican American women were included in the study with randomization into Parish Nurse Intervention Program (n=49) and care as usual (n=51) groups. MAIN OUTCOME MEASURES: The Health Promoting Lifestyle Profile II (HPLP II) and two measures of glycemic control pre- and post-intervention, as well as newborn size, and days of maternal and neonatal hospitalization. RESULTS: Outcomes indicate significantly improved Health Promoting Lifestyle Profile II scores in the Parish Nurse Intervention Program group post-intervention compared with the Care As Usual group. No significant differences between groups regarding glycemic control, macrosomia, or days of maternal or neonatal hospitalization were found. CONCLUSIONS: A Parish Nurse Intervention Program for pregnant women of Mexican descent with gestational diabetes is effective in leading to improved self-reported health promoting behaviors.

Michel, B. and D. Charron-Prochownik "Diabetes nurse educators and preconception counseling." Diabetes Educ. 2006 Jan-Feb;32(1):108-16.

PURPOSE: The purpose of this study was to examine the diabetes nurse educator's role, practice, and training in preconception counseling (PC) when caring for adolescents with diabetes. METHODS: A descriptive, correlational research design, using a cross-sectional survey technique, was used. Subjects were 2003 registered nurse members of the American Association of Diabetes Educators. A survey instrument was developed by the investigator and placed on the World Wide Web. RESULTS: Although most of the diabetes nurse educators were aware of PC, most reported not having received any training in PC and would benefit from this education. Thirty percent of the respondents did not routinely provide PC to their adult female clients, and 40% did not provide this to adolescents. CONCLUSIONS: Results of this study

suggest that the diabetes nurse educators in this sample would benefit from receiving instruction about PC. The diabetes nurse educators should be trained to provide PC to all female clients with diabetes of childbearing age starting at puberty.

Modic, M. B., C. Canfield, et al. "A diabetes management mentor program: outcomes of a clinical nurse specialist initiative to empower staff nurses." Clin Nurse Spec. 2012 Sep-Oct;26(5):263-71. doi: 10.1097/NUR.0b013e318263d73d.

PURPOSE: The purpose of this project was to enhance the knowledge of the bedside nurse in diabetes management. A forum for ongoing support and exploration of clinical problems, along with the distribution of educational tools were the components of this program. BACKGROUND: Diabetes accounts for 30% of patients admitted to the hospital. It has become more challenging to manage as the treatment choices have increased. There are a number of researchers who have identified nurse and physician knowledge of diabetes management principles as suboptimal. DESCRIPTION OF THE INNOVATION: Staff nurses are educated for a role as a Diabetes Management Mentor and are expected to educate/dialogue with peers monthly, model advocacy and diabetes patient education skills, facilitate referrals for diabetes education, and direct staff to resources for diabetes management. OUTCOMES: Diabetes Management Mentors feel more confident in their knowledge of diabetes and their ability to resolve clinical issues as they arise. CONCLUSION: The Diabetes Management Mentor role is another avenue for nurses to refine their clinical knowledge base and acquire skills to share with colleagues while remaining at the bedside. IMPLICATIONS: The clinical nurse specialist is expertly prepared to foster the professional development of bedside nurses while simultaneously making a positive impact on disease management. Opportunity for future investigation includes efficacy of teaching tools on diabetes mastery, the effect of clinical nurse specialist mentoring on a select group of bedside nurses, and the Diabetes Management Mentor's impact on prevention of near-miss events.

Moran, K., R. Burson, et al. "Exploring the cost and clinical outcomes of integrating the registered nurse-certified diabetes educator into the patient-centered medical home." Diabetes Educ. 2011 Nov-Dec;37(6):780-93. doi: 10.1177/0145721711423979.

PURPOSE: The purpose of this study was to implement and evaluate a care delivery model integrating the registered nurse-certified diabetes educator into the patient-centered medical home to assist in achieving positive clinical and cost outcomes in diabetes care. METHODS: A 1-group pretest-posttest research design was used. Patients were recruited from 2 patient-centered medical home designated/nominated primary care offices. Inclusion criteria were as follows: diagnosis of type 1 or type 2 diabetes, aged 18 to 80 years, A1C >/= 8%, English speaking, and no diabetes education within 6 months. There were 34 participants (men, n = 22; women, n = 12) with a mean age of 53.24. The intervention incorporated an assessment, 4 patient-centered monthly group sessions, and 4 individual follow-up sessions. Study measures included program surveys, participation and satisfaction rates, Healthcare Effectiveness Data and Information Set attainment rates, and the following physiologic measures obtained from the medical record: A1C, fasting blood glucose, LDL, urine microalbumin, blood pressure, retinal eye exam, and body mass index. Cost-effectiveness measures included program costs, performance incentives, revenue, provider time saved, and patient health care utilization. RESULTS: Paired-samples t tests identified significant improvements in A1C, fasting blood glucose, and LDL. Patients and providers were highly satisfied with the program. Cost-benefit analysis revealed a net pretax program benefit. CONCLUSIONS: Results of the study indicated that integrating the registered nurse-certified diabetes educator in the patient-centered medical home improves clinical outcomes and is cost-effective. Diabetes education and support are integral components of diabetes management.

Moser, A., H. van der Bruggen, et al. "Competency in shaping one's life: autonomy of people with type 2 diabetes mellitus in a nurse-led, shared-care setting; a qualitative study." Int J Nurs Stud. 2006 May;43(4):417-27. Epub 2005 Aug 22.

BACKGROUND: In the Netherlands diabetes specialist nurses play an important role in specialized, long-term care for the chronically ill. One of the goals of nurse-led, shared care is to encourage chronically ill people to participate actively in selecting the organisation and interventions of care. This paper reports the findings of a study to determine which concepts of autonomy people with type 2 diabetes use in a nurse-led, shared-care setting. OBJECTIVES: The aim of this article was to portray how people with type 2 diabetes mellitus who are being cared for by diabetes specialist nurses in a shared-care unit view autonomy. DESIGN AND SETTING: This qualitative study used in-depth interviews and was carried out in a nurse-led, shared-care unit in the Netherlands. PARTICIPANTS: The study population consisted of 15 people who were enrolled for at least 1 year at the nurse-led, shared-care unit and who lived independently at home. METHOD: Data were analysed with a grounded-theory-like

method. RESULT: The core category, 'competency in shaping one's life', described how people with diabetes exercise their autonomy. Seven categories that emerged were considered dimensions of autonomy. The dimensions were: identification, self-management, welcomed paternalism, self-determination, shared decision-making, planned surveillance, and responsive relationship. CONCLUSION: Autonomy is a multi-dimensional, dynamic and complex construct. Further research is needed to investigate which decision-making processes patients with type 2 diabetes use in a nurse-led, shared-care setting.

Mullen, B. A. and P. A. Kelley "Diabetes nurse case management: an effective tool." J Am Acad Nurse Pract. 2006 Jan;18(1):22-30.

PURPOSE: In March 2000, a large tertiary military medical treatment facility on the east coast implemented a diabetes nurse case management program to coordinate care for patients with diabetes mellitus type 1 or type 2 and a hemoglobin A1c value of 8.0% or greater. Although proven successful for patients while enrolled in the program, there was a lack of research that evaluated how successful patients were at continuing diabetes self-management once discharged. This study evaluated glycosylated hemoglobin A1c (A1c), total cholesterol (TC), triglyceride, and low-density lipoprotein (LDL) levels in patients at admission, discharge, and 6 months following discharge from the program. DATA SOURCES: A retrospective medical record review of laboratory data was evaluated using descriptive statistics and paired t-test. CONCLUSIONS: Significant reductions in A1c and TC values from admission to discharge were achieved, which the patients maintained 6 months following discharge. There was also a significant reduction in LDL value from admission to 6 months following discharge. IMPLICATIONS FOR PRACTICE: This study supports the value of nurse case management for patients with diabetes.

Nabors, L., A. Troillett, et al. "School nurse perceptions of barriers and supports for children with diabetes." J Sch Health. 2005 Apr;75(4):119-24.

Adolescents with type 1 diabetes are likely attending most middle and high schools. These youth often do not receive the support needed to manage their diabetes during or after school. Nurses (n=110) from 3 states responded to a survey examining perceptions of barriers to and supports for diabetes management during school and after school activities. Results indicated that adolescents need more support at school. Support could be facilitated by education of school staff; improved communication among youth, parents, school nurses, teachers, and physicians; and more communication from adolescents to others about what they need to manage well in school. Open-ended questions allowed nurses to provide recommendations for supporting youth and ideas for addressing barriers to management at school. Future studies should address ways to enable adolescents to communicate about their diabetes and ways to educate the school team.

Navicharern, R., Y. Aungsuroch, et al. "Effects of multifaceted nurse-coaching intervention on diabetic complications and satisfaction of persons with type 2 diabetes." J Med Assoc Thai. 2009 Aug;92(8):1102-12.

OBJECTIVE: To examine the effects of multifaceted nurse-coaching intervention on diabetic complications which were assessed by HbA1c, blood pressure, LDL-C levels and satisfaction with nursing intervention of persons with type 2 diabetes. MATERIAL AND METHOD: Quasi-experimental design study was conducted from October 2007 to March 2008. Forty participants with type 2 diabetes of two Red Cross Health Stations in Bangkok, Relief and Public Health Bureau of the Thai Red Cross Society, were selected by purposive sampling and matched pair The participants of the 11th Red Cross Health Station were the control group (n=20) who received the usual care while the participants of the 2nd Red Cross Health Station were the experimental group (n=20) who received the multifaceted nurse-coaching intervention over 12 weeks. A multifaceted nurse-coaching intervention was performed on a trail basis on the coaching model of Eaton and Johnson (2001). The coaching process included assessment, goal definition, analysis, exploring, action plan, learning and feedback and consisted of 3 individualized sessions and 2 follow-up phone calls over 12 weeks. The community nurses were trained to be involved in the intervention. Data from each participant were collected by using a questionnaire related to their personal demography and signs or risk factors of diabetic complications including HbA1c, blood pressure and LDL-C testing, and interviewing satisfaction with nursing intervention questionnaire. The data were analyzed using dependent samples t-test, and independent sample t-test. RESULTS: Both groups were similar in age, sex and duration of diabetic history. After 12 weeks, the mean average of HbA1c of the experimental group was significantly lower than that of the control group (x(exp) = 7.10, SD = .67 vs. x(cont) = 7.72, SD = .97; $p <$ or = 0.5). There was no statistically significant difference in blood pressure between the experimental group and the control group (systolic blood pressure: x(exp) = 121.0, SD = 10.28 vs. x(cont) = 127.4, SD = 15.30; $p > 0.5$, diastolic blood pressure: x(exp) = 81.30, SD = 9.18 vs. x(con) = 79.4, SD = 19.43; $p > .05$). There was also no

difference between the two groups in average mean of LDL-C level (x(exp) = 123.60, SD = .45.53 vs. X(cont) = 110.40, SD = 25.60; p > .05). The participants in the experimental group had significantly higher satisfaction score than the control group (x(exp) = 4.91, SD = 0.91 vs. x(cont) = 2.49, SD = 0.18; p < 0.5). CONCLUSION: The multifaceted nurse-coaching intervention could reduce HbA1c and increase satisfaction but could not decrease blood pressure and LDL-levels in persons with type 2 diabetes who received the intervention for 12 weeks.

Newlin Lew, K., S. Nowlin, et al. "State of the science: diabetes self-management interventions led by nurse principal investigators." West J Nurs Res. 2014 Oct;36(9):1111-57. doi: 10.1177/0193945914532033. Epub 2014 May 7.

Over the past decade, diabetes self-management (DSM) interventions have become increasingly heterogeneous to address the needs of diverse populations. The purpose of this integrative review is to summarize the state of the science regarding DSM interventions led by nurse principal investigators. The Preferred Reporting Items of Systematic Reviews and Meta-Analyses framework informed identification, selection, and appraisal of the literature. A total of 44 national and international studies (RCTs [randomized controlled trial] and quasi-experimental studies) were identified for inclusion. Across national studies, diverse ethnic groups (Latinos, African Americans, Asians, and Native Americans) were most frequently sampled (67%). Review findings identified (a) DSM intervention typologies (primary DSM intervention, DSM reinforcement intervention, and primary DSM intervention plus reinforcement intervention) and selection of blended or bundled intervention components; (b) DSM intervention translation to community-based, electronic, and home settings; and (c) DSM intervention delivery (interventionists, dosages, and fidelity).

Odnoletkova, I., G. Goderis, et al. "Nurse-led telecoaching of people with type 2 diabetes in primary care: rationale, design and baseline data of a randomized controlled trial." BMC Fam Pract. 2014 Feb 4;15:24. doi: 10.1186/1471-2296-15-24.

BACKGROUND: Despite the efforts of the healthcare community to improve the quality of diabetes care, about 50% of people with type 2 diabetes do not reach their treatment targets, increasing the risk of future micro-and macro-vascular complications. Diabetes self-management education has been shown to contribute to better disease control. However, it is not known which strategies involving educational programs are cost-effective. Telehealth applications might support chronic disease management. Transferability of successful distant patient self-management support programs to the Belgian setting needs to be confirmed by studies of a high methodological quality. "The COACH Program" was developed in Australia as target driven educational telephone delivered intervention to support people with different chronic conditions. It proved to be effective in patients with coronary heart disease after hospitalization. Clinical and cost-effectiveness of The COACH Program in people with type 2 diabetes in Belgium needs to be assessed. METHODS/DESIGN: Randomized controlled trial in patients with type 2 diabetes. Patients were selected based on their medication consumption data and were recruited by their sickness fund. They were randomized to receive either usual care plus "The COACH Program" or usual care alone. The study will assess the difference in outcomes between groups. The primary outcome measure is the level of HbA1c. The secondary outcomes are: Total Cholesterol, LDL-Cholesterol, HDL-Cholesterol, Triglycerides, Blood Pressure, body mass index, smoking status; proportion of people at target for HbA1c, LDL-Cholesterol and Blood Pressure; self-perceived health status, diabetes-specific emotional distress and satisfaction with diabetes care. The follow-up period is 18 months. Within-trial and modeled cost-utility analyses, to project effects over life-time horizon beyond the trial duration, will be undertaken from the perspective of the health care system if the intervention is effective. DISCUSSION: The study will enhance our understanding of the potential of telehealth in diabetes management in Belgium. Research on the clinical effectiveness and the cost-effectiveness is essential to support policy makers in future reimbursement and implementation decisions.

O'Hagan, M. and J. N. Harvey "Glycemic control in children with type 1 diabetes in wales: influence of the pediatric diabetes specialist nurse." Diabetes Care. 2010 Aug;33(8):1724-6. doi: 10.2337/dc09-2304. Epub 2010 Apr 30.

OBJECTIVE: To determine whether glycemic control is improving in diabetic children in Wales and to identify factors associated with improvement. RESEARCH DESIGN AND METHODS: Data were collected in 2001 and 2006. RESULTS: Over time A1C was reduced from 9.08 +/- 1.66 to 8.88 +/- 1.63% (P = 0.012). There were differences among centers (P < 0.001) and differential changes over time (interaction P < 0.001). Since 2001 five centers had appointed a pediatric diabetes specialist nurse (PDSN). A1C improved in these centers from 9.59 +/- 1.88 to 8.72 +/- 1.61% (P < 0.001). Glycemic control was worse in children aged >10 years compared with younger patients (P <

0.001). Improvement occurred in those aged >10 years. Age (P = 0.003) and insulin dose (P < 0.001) were positively and independently associated with A1C. Thus, any influence of PDSNs was not achieved through increased insulin prescription. CONCLUSIONS: Improvement in glycemic control has occurred. Worse control is associated with greater prescribed insulin dose in older children. Appointment of PDSNs was associated with improved glycemic control among adolescents.

Ohman-Strickland, P. A., A. J. Orzano, et al. "Quality of diabetes care in family medicine practices: influence of nurse-practitioners and physician's assistants." Ann Fam Med. 2008 Jan-Feb;6(1):14-22. doi: 10.1370/afm.758.

PURPOSE: The aim of this study was to assess whether the quality of diabetes care differs among practices employing nurse-practitioners (NPs), physician's assistants (PAs), or neither, and which practice attributes contribute to any differences in care. METHODS: This cross-sectional study of 46 family medicine practices from New Jersey and Pennsylvania measured adherence to American Diabetes Association diabetes guidelines via chart audits of 846 patients with diabetes. Practice characteristics were identified by staff surveys. Hierarchical models determined differences between practices with and without NPs or PAs. RESULTS: Compared with practices employing PAs, practices employing NPs were more likely to measure hemoglobin A(1c) levels (66% vs 33%), lipid levels (80% vs 58%), and urinary microalbumin levels (32% vs 6%); to have treated for high lipid levels (77% vs 56%); and to have patients attain lipid targets (54% vs 37%) (P <or= .005 for each). Practices with NPs were more likely than physician-only practices to assess hemoglobin A(1c) levels (66% vs 49%) and lipid levels (80% vs 68%) (P<or=.007 for each). These effects could not be attributed to use of diabetes registries, health risk assessments, nurses for counseling, or patient reminder systems. Practices with either PAs or NPs were perceived as busier (P=.03) and had larger total staff (P <.001) than physician-only practices. CONCLUSIONS: Family practices employing NPs performed better than those with physicians only and those employing PAs, especially with regard to diabetes process measures. The reasons for these differences are not clear.

Pearce, M. J., K. Pereira, et al. "The psychological impact of diabetes: a practical guide for the nurse practitioner." J Am Assoc Nurse Pract. 2013 Nov;25(11):578-83. doi: 10.1002/2327-6924.12035. Epub 2013 Jun 17.

PURPOSE: To describe the psychological impact of diabetes and to present a number of practical ways that nurse practitioners (NPs) can assess and address these concerns in the context of primary care. DATA SOURCES: Theory and research articles are reviewed from the fields of nursing and psychology describing the psychological problems unique to those with diabetes. A case study is provided for practical application of the clinical tools presented. CONCLUSIONS: The psychological consequences of diabetes can be significant, including feelings of loss, anger, depression, anxiety, and disordered eating. There are a number of useful tools and resources for NPs to use in the primary care setting to effectively manage the multifaceted impact of diabetes on patients' lives. These tools include listening, showing empathy, comprehensive assessment of psychosocial issues, equipping patients for self-management, encouraging self-care, teaching stress management skills, and offering additional mental health support. Psychotherapy can help patients to address emotional and behavioral aspects of diabetes. IMPLICATIONS FOR PRACTICE: Assessing and addressing the psychological aspects of illness is an important part of caring for people with diabetes. There are many tools and resources available to NPs that can be implemented with minimal training.

Peery, A. I., M. K. Engelke, et al. "Parent and teacher perceptions of the impact of school nurse interventions on children's self-management of diabetes." J Sch Nurs. 2012 Aug;28(4):268-74. doi: 10.1177/1059840511433860. Epub 2012 Jan 4.

Diabetes is a common chronic illness among school-age children. The school nurse collaborates with the student, parents, and teachers to help the child manage their diabetes effectively. Very little is known about the relationship between school nurse interventions and parent/teacher perceptions of the child's self-management. We examined this relationship in a sample of 69 school-age children who received case management from school nurses. Our findings suggest that teachers and parents do not always agree on how well a child manages their illness. When school nurses provide more education and counseling, parents are more likely to perceive an improvement in their child's self-management. Teachers are more likely to perceive an improvement when the nurse provides more classroom visits and includes the physical education teacher and guidance counselor. These findings suggest that the roles of educator, counselor, and collaborator are important for school nurses who provide care to school-age children with diabetes.

Peyrot, M., R. R. Rubin, et al. "Physician and nurse use of psychosocial strategies in diabetes care: results of the cross-national Diabetes Attitudes, Wishes and

Needs (DAWN) study." Diabetes Care. 2006 Jun;29(6):1256-62.

OBJECTIVE: To determine the use of psychosocial strategies by health care providers in treating patients with diabetes and the factors associated with use of these strategies. RESEARCH DESIGN AND METHODS: Cross-sectional survey of national samples of generalist and diabetes specialist physicians (n = 2,705) and nurses (n = 1,122) from the multinational study of Diabetes Attitudes, Wishes and Needs. Respondents were from 13 countries in Asia, Australia, Europe, and North America. Two psychosocial strategies were examined: provider psychosocial care, which provides psychosocial support by diabetes care providers to their own patients, and psychosocial specialist care, which refers diabetic patients to psychosocial specialists. RESULTS: Compared with physicians, nurses perceived significantly higher prevalence and severity of psychosocial problems and used psychosocial strategies significantly more frequently, even though they rated their own psychosocial skills lower. Among both physicians and nurses, diabetes specialists were significantly more likely than generalists to utilize psychosocial strategies. Physicians and nurses used psychosocial strategies significantly more when they believed that more patients have psychosocial problems and that problems interfere more with diabetes control. Referral to psychosocial specialists was significantly more likely when physicians and nurses perceived that professional psychological resources were more available. There were substantial country differences in all factors studied. Compared with other countries, U.S. providers provided more psychosocial care themselves but were less likely to refer to psychosocial specialists. CONCLUSIONS: Psychosocial strategies are important parts of the diabetes care provider repertoire; understanding their determinants may facilitate efforts to increase their use.

Pishdad, G. R., R. Pishdad, et al. "A nurse-managed diabetes care programme." Int J Clin Pract. 2007 Sep;61(9):1492-7.

AIMS: To compare diabetes outcomes in patients under endocrinologist-directed diabetes care with those in patients in a nurse-managed diabetes care (NMDC) programme. METHODS: NMDC was provided to the diabetic patients referring to a Wednesday diabetes clinic in Shiraz. A total of 159 patients who had received such care were hierarchically matched with 159 diabetic patients receiving usual endocrinologist care in the same clinic during the rest of the week. Outcomes in patients who completed 1 year under NMDC were compared with those of usual endocrinologist care patients and also with those derived from the year before receiving NMDC. RESULTS: For patients in NMDC programme, the process measures recommended by the American Diabetes Association (ADA) were carried out more frequently than for the appropriate control patients. Under NMDC, HbA(1c) levels fell 3.2% in the 117 patients who were followed for at least 6 months, when compared with a 2.5% fall under usual endocrinologist care ($p < 0.001$). During the year before the study, in 73 patients mean HbA(1c) levels decreased by 2.6%. At the end of a year under the NMDC programme, the values fell further by 0.65% ($p < 0.001$). Also, the proportions of patients with TG levels > 150 mg% and LDL levels > 100 mg% decreased from 31% and 36% to 16% and 20%, respectively ($p < 0.04$ and $p < 0.05$, respectively). CONCLUSION: NMDC programme improves diabetes outcomes more significantly than endocrinologist-directed care.

Prats-Guardiola, M. and R. M. Lopez-Pisa "[Integral approach by the case manager and the community nurse to a complex case of diabetes mellitus in the home]." Enferm Clin. 2010 Mar-Apr;20(2):126-31. doi: 10.1016/j.enfcli.2010.01.007. Epub 2010 Mar 1.

We present the case of a patient with long-term and clinically complex Diabetes Mellitus. She was taking part in the home care program in Primary Care. The complications of her DM affected her quality of life: blindness, kidney failure, treated with hemodialysis, and a cerebrovascular attack. We describe the evaluation following Virginia's Henderson model. This evaluation was made in the patient's home after she was discharged from the socio-health centre where she was admitted as her right leg was amputated at a supracondylar level. It was designed a care plan between the community nurse and the case manager using NANDA, NOC and NIC taxonomy. The care plan was carried out as a joint effort between the community nurse and the case manager who coordinated the planning with the rest of professionals. Results were evaluated 6 months after the initial assessment. This case, which had a high dependence and a high clinical complexity, required a multidisciplinary approach and the integration of different professionals, services and institutions to implement the patient's treatment. Because of all the above, it is important to mention the case management function to guarantee continuity, and overall and integrated care.

Price, C., D. Shandu, et al. "Long-term glycaemic outcome of structured nurse-led diabetes care in rural Africa." QJM. 2011 Jul;104(7):571-4. doi: 10.1093/qjmed/hcr005. Epub 2011 Jan 28.

BACKGROUND: Diabetes care delivery in rural Africa is difficult. Problems include lack of

dedicated personnel, monitoring systems, laboratory support and drugs. Few structured intervention projects have been undertaken, none with long-term follow-up. AIM: To determine the long-term (4 years) glycaemic outcome of a structured nurse-led intervention programme for type 2 diabetic patients in rural Africa. DESIGN: Single-centre, observational cohort study. METHODS: The programme was delivered in the scattered primary health clinics of Hlabisa District, in northern Kwazulu Natal, South Africa. Monthly diabetic clinics were held at which empowerment-based education was delivered and regularly reinforced. Oral hypoglycaemic agents (OHAs) were titrated according to a previously validated clinical algorithm. Outcome was measured by glycated haemoglobin (HbA(1)c), as well as body mass index (BMI). Data were collected at baseline, and then 6, 18, 24 and 48 month's post-intervention. RESULTS: Eighty patients had data available at all time collection points. They were of mean +/- SD, age 56 +/- 11 years, 70% were female, BMI 31.5 +/- 7.2 kg/m(2) and HbA(1)c 10.8 +/- 4.2%. HbA(1)c fell significantly to 8.1 +/- 2.2% at 6 months and 7.5 +/- 2.0% at 18 months. By 24 months, it had risen (8.4 +/- 2.3%), and at 4 years post-intervention it was 9.7 +/- 4.0% (still significantly lower than baseline, P = 0.015). BMI rose significantly at 6 and 18 months, but by 48 months was not significantly different from baseline. CONCLUSION: We conclude that the intervention led to marked HbA(1)c improvements up to 18 months follow-up, but thereafter there was 'glycaemic slippage'. This may be not only due to educational 'wear-off', noted in other education-intervention programmes, but also to the expected glycaemic deterioration with time known to occur in type 2 diabetes. Nevertheless, 4-year HbA(1)c levels were still significantly lower than at baseline. The programme was also well received by staff and patients, and we believe is an appropriate and effective diabetes intervention system in rural Africa.

Richardson, G. C., A. L. Derouin, et al. "Nurse practitioner management of type 2 diabetes." Perm J. 2014 Spring;18(2):e134-40. doi: 10.7812/TPP/13-108.

CONTEXT: Multifactorial barriers prevent primary care clinicians from helping their adult patients with type 2 diabetes achieve good control of hemoglobin A1c (HbA1c) levels. Patients' depression and low self-efficacy can complicate diabetes management by impairing tasks needed for effective disease self-management. OBJECTIVES: To evaluate whether nurse practitioners in collaborative practices with primary care clinicians are effective in helping improve control of HbA1c, blood pressure (BP), and low-density lipoprotein cholesterol (LDL-C) in adults with uncontrolled hyperglycemia, and to assess whether nurse practitioner-guided care affects depression and self-efficacy in these patients. DESIGN: De-identified preintervention and postintervention data were collected from prospective review of medical charts of patients in a managed care organization's primary care clinics. MAIN OUTCOME MEASURES: Preintervention and postintervention HbA1c values were evaluated as the primary outcome measure. Preintervention and postintervention values for BP, LDL-C, body weight, and depression and self-efficacy scores were secondary outcome measures. RESULTS: After intervention, 50% of 26 patients achieved HbA1c benchmarks, 95.6% achieved systolic and diastolic BP benchmarks, and 57.8% achieved LDL-C benchmarks. Wilcoxon paired samples tests showed significantly increased self-efficacy ($z = -3.42$, $p < 0.001$) from preintervention to postintervention. Depression scores decreased slightly from preintervention (mean = 0.44, standard deviation = 1.34, median < 0.001) to postintervention values (mean = 0.18, standard deviation = 0.73, median < 0.001), but this decrease was not significant. CONCLUSION: Integrating nurse practitioners into primary care teams to provide innovative methods of support to adults with uncontrolled hyperglycemia improves clinical outcomes and self-efficacy for patients with type 2 diabetes.

Risa, C. F., F. Friberg, et al. "Norwegian nurse-midwives' perspectives on the provision of antenatal diabetes care in an outpatient setting: A qualitative study." Women Birth. 2015 Jun;28(2):e1-6. doi: 10.1016/j.wombi.2015.01.013. Epub 2015 Feb 20.

BACKGROUND: There is limited research related to nurse-midwives' accounts of their provision of antenatal diabetes care in hospital outpatient settings. This study explored the perspectives and experiences of eight Norwegian nurse-midwives regarding the provision of the midwifery aspect of an antenatal consultation as part of the diabetes specialist team. METHODS: A qualitative descriptive study was used. Eight nurse-midwives aged between 37 and 58 years, representing four Norwegian hospital outpatient clinics, participated in individual interviews. Transcribed interviews were analysed in accordance with a qualitative thematic analysis. RESULTS: Three main themes were developed: "Approaching the women as persons in order to frame strengths and normalcy", "Managing different tasks judiciously" and "Balancing conflicting values". Some of the barriers were found to be related to the organisation of care, such as short timeframes with a medical focus, which overshadowed or forced the normalcy aspects of childbearing into the background. Managing risk and evidence-based knowledge were demanding tasks to fulfil in a judicious way. Some midwives experienced

ambiguity while being forced to prioritise medical factors over woman-focused care while running others' errands, an act of balancing conflicting values. CONCLUSIONS: The contextual conditions related to the organisation present barriers for pregnant women to receive woman-focused care beyond the medical approach. The midwifery contribution in this care setting should be clearly recognised and defined so that women can capitalise on the different professionals and their expert competencies and contributions in this setting.

Robertson, C. "The role of the nurse practitioner in the diagnosis and early management of type 2 diabetes." J Am Acad Nurse Pract. 2012 Apr;24 Suppl 1:225-33. doi: 10.1111/j.1745-7599.2012.00719.x.

PURPOSE: To review the early diagnosis and early effective treatment of type 2 diabetes and its role in reducing the risk of complications. This article discusses the diagnosis of T2D and the initial stages of disease management with oral monotherapy. DATA SOURCES: Extensive literature review of textbooks and clinical, medical, and nursing journals. CONCLUSIONS: There are clear evidence-based recommendations for disease management in the early stages of T2D, with therapy focusing on implementation of lifestyle changes and use of pharmacologic monotherapy. A vital part of early T2D treatment is patient education, which can lay the foundation for treatment throughout the disease continuum. The lifestyle changes recommended for management of T2D can be difficult for patients to sustain, and treatment regimens are often complex. IMPLICATIONS FOR PRACTICE: Type 2 diabetes (T2D) is a progressive disease, associated with a long-term risk of morbidity and mortality. Therefore, it is important that treatment is individualized, and that ongoing support is provided to maximize the possibility of achieving treatment goals. Current standards for T2D treatment are designed for a patient-centered treatment approach managed by team of healthcare practitioners, in which the nurse practitioner (NP) is central.

Sampson, M. J., T. Crowle, et al. "Trends in bed occupancy for inpatients with diabetes before and after the introduction of a diabetes inpatient specialist nurse service." Diabet Med. 2006 Sep;23(9):1008-15.

AIMS: To compare diabetes bed occupancy and inpatient length of stay, before and after the introduction of a dedicated diabetes inpatient specialist nurse (DISN) service in a large UK Hospital. METHODS: We analysed bed occupancy data for medical or surgical inpatients for 6 years (1998-2004 inclusive), with a DISN service in the final 2 years. Excess bed days per diabetes patient were derived from age band, specialty, and seasonally matched data for all inpatients without diabetes. We also analysed the number of inpatients with known diabetes who did not have diabetes recorded as a discharge diagnosis. RESULTS: There were 14,722 patients with diabetes (9.7% of all inpatients) who accounted for 101 564 occupied bed days (12.4% of total). Of these, 18 161 days (17.8%) were excess compared with matched patients without diabetes, and were concentrated in those < 75 years old. Mean excess bed days per diabetes inpatient under 60 years of age was estimated to be 1.9 days before the DISN appointment, and this was reduced to 1.2 bed days after the appointment (P = 0.03). This is equivalent to 700 bed days saved per year per 1000 inpatients with diabetes under 60 years old, with an identical saving for those aged 61-75 years (P = 0.008), a saving of 1330 diabetes bed days per year by one DISN. Excess diabetes bed occupancy was 167 excess bed days per year per 1000 patients with diabetes in the local population after the DISN appointment. One quarter of the known Type 2 diabetes population were admitted annually, but one quarter of patients had no diagnostic code for diabetes. CONCLUSIONS: Diabetes excess bed occupancy was concentrated in patients < 75 years old, and this was reduced notably following the introduction of a DISN service.

Schantz, S. and N. Bobo "School program for screening students at risk for diabetes: the School Nurse Childhood Obesity Prevention Education program." Nasnewsletter. 2009 Jul;24(4):150-1, 154.

Accurate height and weight and BMI assessment by the school nurse is the first step in identifying students at risk for developing type 2 diabetes or other health consequences. Additional screening for children at or above the 95th percentile for BMI identifies those students most at risk. MAP affiliate sites indicate that when this assessment and communication is done in a private, sensitive, and caring manner--with emphasis on the health of the child-parents/ guardians are receptive to the information. School nurses, with the knowledge and skills provided by the S.C.O.P.E. program, alert parents/guardians to address their children's health risks and contact their health care providers. School nurses are also taught how they can provide guidance for school leadership and community coalitions to incorporate effective changes to food and physical activity offerings to students. The S.C.O.P.E. program can enhance the role of the school nurse in the global fight against childhood obesity so school-age children are healthy and ready to learn.

Schlicht, K., M. A. Morgan, et al. "Safety and acceptability of practice-nurse-managed care of

depression in patients with diabetes or heart disease in the Australian TrueBlue study." BMJ Open. 2013 Apr 8;3(4). pii: e002195. doi: 10.1136/bmjopen-2012-002195. Print 2013.

OBJECTIVES: To determine the safety and acceptability of the TrueBlue model of nurse-managed care in the primary healthcare setting. DESIGN: A mixed methods study involving clinical record audit, focus groups and nurse interviews as a companion study investigating the processes used in the TrueBlue randomised trial. SETTING: Australian general practices involved in the TrueBlue trial. PARTICIPANTS: Five practice nurses and five general practitioners (GPs) who had experienced nurse-managed care planning following the TrueBlue model of collaborative care. INTERVENTION: The practice nurse acted as case manager, providing screening and protocol-management of depression and diabetes, coronary heart disease or both. PRIMARY OUTCOME MEASURES: Proportion of patients provided with stepped care when needed, identification and response to suicide risk and acceptability of the model to practice nurses and GPs. RESULTS: Almost half the patients received stepped care when indicated. All patients who indicated suicidal ideations were identified and action taken. Practice nurses and GPs acknowledged the advantages of the TrueBlue care-plan template and protocol-driven care, and the importance of peer support for the nurse in their enhanced role. CONCLUSIONS: Practice nurses were able to identify, assess and manage mental-health risk in patients with diabetes or heart disease.

Segal, G., E. Karniel, et al. "A nurse-guided, basal-prandial insulin treatment protocol for achieving glycaemic control of hospitalized, non-critically ill diabetes patients, is non-inferior to physician-guided therapy: A pivotal, nurse-empowerment study." Int J Nurs Pract. 2014 Apr 1. doi: 10.1111/ijn.12292.

Basal-prandial insulin is established for glycaemic control for hospitalized, type 2 diabetes patients. Empowering nurses to guide such protocols could be advantageous.The study aims to comparatively assess the efficacy and safety of glycaemic control by a nurse-guided protocol with physician-guided therapy. It also aims to assess the impact of empowerment on the nurses' sense of competence. This is a prospective, controlled, randomized, single-blinded study. Validated protocol utilizing basal-prandial insulin was used. Glycaemic control was the primary efficacy outcome, whereas hypoglycaemia and laboratory parameters were followed for safety. Assessment of nurses' psychological empowerment was done. One hundred fifty-eight treatment days of 53 patients were included. Patients were randomized to either study group (n = 27) or control group (n = 26). Glycaemia deviation from liberal range (60-300 mg/dL) was 7.4% of days for nurse-guided, basal-prandial insulin treatment protocol (NGP) and 7.84% for physician-guided therapy (PGT), P = 0.901. Rate of glycaemia deviation from the strict range (100-180 mg/dL) was 49.76% for NGP and 47.38% for PGT, P = 0.703. Mean range of daily deviation was similar (77.05 mg/dL for NGP and 76.04 mg/dL for PGT, P = 0.93). There were no significant differences in safety parameters. An empowerment questionnaire showed tendency for increased nurses' sense of competence. Nurse-guided protocol is non-inferior to physician-guided treatment in efficacy and safety parameters. Nurses' sense of competence was positively influenced.

Shepherd, M., K. Colclough, et al. "Ten years of the national genetic diabetes nurse network: a model for the translation of genetic information into clinical care." Clin Med (Lond). 2014 Apr;14(2):117-21. doi: 10.7861/clinmedicine.14-2-117.

Increasing technological advances have resulted in the recognition of a range of genetic conditions not traditionally seen by clinical genetics teams. This has implications for the education of other healthcare professionals who may have insufficient knowledge to identify or support families with these conditions. The national genetic diabetes nurse (GDN) project, which trains diabetes specialist nurses (DSNs), was started in 2002 to increase awareness of monogenic diabetes among healthcare professionals across the UK. This paper describes the development and evaluation of the first 10 years of this project, indicating that GDNs have increased diagnostic referral rates and supported local families through diagnosis and treatment changes across the UK. The GDN project has proved an effective, innovative means of disseminating new genetic information from a centre of excellence and is suggested as a model for the successful and rapid dissemination of genetic information into routine clinical care in other conditions.

Sibley, A., S. Latter, et al. "Medication discussion between nurse prescribers and people with diabetes: an analysis of content and participation using MEDICODE." J Adv Nurs. 2011 Nov;67(11):2323-36. doi: 10.1111/j.1365-2648.2011.05686.x. Epub 2011 May 19.

AIM: This paper is a report of a study to identify the content of, and participation in, medicine discussion between nurse prescribers and people with diabetes in England. BACKGROUND: Diabetes affects 246 million people worldwide and effective management of medicines is an essential component of

successful disease control. There are now over 20,000 nurse independent prescribers in the UK, many of whom frequently prescribe for people with diabetes. With this responsibility comes a challenge to effectively communicate with patients about medicines. National guidelines on medicines communication have recently been issued, but the extent to which nurse prescribers are facilitating effective medicine-taking in diabetes remains unknown. METHODS: A purposive sample of 20 nurse prescribers working with diabetes patients audio-recorded 59 of their routine consultations and a descriptive analysis was conducted using a validated coding tool: MEDICODE. Recordings were collected between January and July 2008. The unit of analysis was the medicine. RESULTS: A total of 260 instances of medicine discussion identified in the audio-recordings were analysed. The most frequently raised themes were 'medication named' (raised in 88.8% of medicines), 'usage of medication' (65.4%) and 'instructions for taking medication' (48.5%). 'Reasons for medication' (8.5%) and 'concerns about medication' were infrequently discussed (2.7%). Measures of consultation participation suggest largely dyadic medicine discussion initiated by nurse prescribers. CONCLUSION: MEDICODE discussion themes linked to principles of recent guidelines for effective medicine-taking were infrequently raised. Medicine discussion was characterized by a one statement-one response style of communication led by nurses. Professional development is required to support theoretically informed approaches to effective medicines management.

Stenner, K. L., M. Courtenay, et al. "Consultations between nurse prescribers and patients with diabetes in primary care: A qualitative study of patient views." Int J Nurs Stud. 2011 Jan;48(1):37-46. doi: 10.1016/j.ijnurstu.2010.06.006. Epub 2010 Jul 11.

BACKGROUND: There is a drive to improve the quality of service provision for patients with diabetes and to enable better self-management of this condition. The adoption of prescribing by nurses is increasing worldwide and can potentially enhance service provision. Evidence suggests that patients prefer services where their lifestyle factors and opinions are considered by healthcare professionals within a partnership approach. Few studies have explored patients' views about their consultations with a nurse prescriber. OBJECTIVE: To explore the views patients with diabetes have about their consultations with nurse prescribers and any impact this may have on their medications management. DESIGN: A qualitative study involving semi-structured interviews and thematic analysis. SETTING: Six primary care sites in which nurses prescribed medications for patients with diabetes in England. Data was collected in 2009. PARTICIPANTS: Interviews took place with 41 patients with diabetes from the case loads of 7 nurse prescribers. RESULTS: Findings are reported under three themes; the nurse consultation style, benefits of the nurse prescriber consultation and views on involvement and decision-making. Key aspects of the nurse consultation style were a non-hurried approach, care and rapport, approachability, continuity, and providing clear information based on specialist knowledge. Many benefits were described, including improved access to appropriate advice and medication, greater understanding and ability to self-manage, ability to address problems and improved confidence, trust and wellbeing. While patients were happy with the amount of information received and involvement they had decisions about their treatment, there was some controversy over the consistency of information provided on side-effects of treatment. CONCLUSIONS: The study provides new knowledge about what patients with diabetes value and benefit from in respect to care provided by nurse prescribers. Continuity of relationship, flexibility over consultation length, nurses' interpersonal skills and specialist diabetes knowledge were identified as crucial to good quality care. Patients require that nurse prescribers are skilled in providing a person-centred approach and have access to specialist training. The level of information and involvement offered to patients should reflect patients' requirements.

Stuckey, H. L., C. Dellasega, et al. "Diabetes nurse case management and motivational interviewing for change (DYNAMIC): study design and baseline characteristics in the Chronic Care Model for type 2 diabetes." Contemp Clin Trials. 2009 Jul;30(4):366-74. doi: 10.1016/j.cct.2009.03.002. Epub 2009 Mar 26.

BACKGROUND: Despite evidence that diabetes is costly and devastating, the health care system is poorly equipped to meet the challenges of chronic disease care. The Penn State Institute of Diabetes & Obesity is evaluating a model of managing type 2 DM which includes nurse case management (NCM) and motivational interviewing (MI) to foster behavior change. The primary care intervention is designed to improve patients' self care and to reduce clinical inertia through provider use of standardized clinical guidelines to achieve better diabetes outcomes. METHODS: This RCT tests the efficacy of an enhanced NCM intervention on type 2 DM (n=549) patient outcomes mediated by changes in self-care behavior and diabetes management. Outcome measures include: (a) effect on clinical parameters such as HbA1c (<7), BP (<130/80), and LDL (<100), depression scores and weight; (b) process measures such as complication screening; (c) patient

psychological and behavioral outcomes as measured by emotional distress (PAID), diabetes-specific quality of life (ADDQoL), patient satisfaction (DTSQ), self-care activities (SDSCA); and (d) physician satisfaction and cost-effectiveness of the intervention. CONCLUSIONS: Baseline includes (mean) age=58; BMI=34.4; 57% females; 47% Caucasian, and 39% Hispanic. Patients had elevated HbA1c (8.4), BP (137/77) and LDL (114). Overall, patients were depressed (CES-D=21.6) and had an extremely negative quality of life (ADDQoL=-1.58). We believe that enhanced NCM will both improve self-care and reduce emotional distress for patients with diabetes. If proven effective, enhanced NCM may be translated to other chronic illnesses.

Taylor, K. I., K. M. Oberle, et al. "Promoting health in type 2 diabetes: nurse-physician collaboration in primary care." Biol Res Nurs. 2005 Jan;6(3):207-15.

The purpose of this study is to examine effects of a nurse-physician collaborative approach to care of patients with type 2 diabetes and to determine possible effect sizes for use in computing sample sizes for a larger study. Forty patients from a family practice clinic with type 2 diabetes were randomly assigned to control or experimental groups. The control group received standard care, whereas the experimental group received standard care plus home visits from a nurse, as well as consultation with an exercise specialist and/or nutritionist. Follow-up continued for 3 months. Clinical end points included standard measures of diabetes activity as well as quality-of-life indicators. Focus group interviews were used to explore patients' responses to the program. Although findings were not statistically significant, a trend toward small to moderate positive effect sizes was found in glycosylated hemoglobin and blood pressure. Quality of life measures also showed a trend toward small to moderate, but nonsignificant, improvements in physical functioning, bodily pain, vitality, social and global functioning, energy, impact of diabetes, and health distress. Focus group interviews indicated a very positive response from patients, who expressed feelings of empowerment. In this study, patients treated with nurse-physician collaboration demonstrated small, but nonsignificant, improvements in blood chemistry after only 3 months. Physical and social functioning, energy, and bodily pain also showed a small improvement. Changes in awareness of effects of diabetes on health and an expressed sense of self-efficacy suggest that effects could be sustainable over the longer term.

Tierney, K. "Therapeutic choices, and the nurse practitioner's role, in type 2 diabetes when metformin alone is no longer enough." J Am Acad Nurse Pract. 2012 Apr;24 Suppl 1:234-48. doi: 10.1111/j.1745-7599.2012.00720.x.

PURPOSE: This article provides an overview of the currently available treatments for type 2 diabetes (T2D), outlining the most up to date information to assist nurse practitioners (NPs) to make informed prescribing decisions for T2D therapy once patients are no longer able to maintain blood glucose control using lifestyle modification and/or metformin therapy. DATA SOURCES: Published guidelines for the management of T2D, review articles, primary manuscripts, and FDA prescribing information documents. CONCLUSIONS: In the past, options for the treatment of T2D were limited. However, there is now an ever increasing number of available therapeutic choices for T2D, that, as well as glycemic control, offer significant additional benefits, particularly in terms of reducing hypoglycemic risk and weight gain. Consequently, these newer agents provide both patients and NPs with a much greater choice for ongoing therapy. IMPLICATIONS FOR PRACTICE: The differing benefits and risk profiles shown by the currently available antidiabetic treatments provide NPs with a unique opportunity to tailor treatment plans more closely to the requirements of each patient. This approach can ensure that the right drug reaches the right patient, which should in turn promote greater treatment compliance and improved outcomes, ultimately slowing disease progression.

Tobe, S. W., G. Pylypchuk, et al. "Effect of nurse-directed hypertension treatment among First Nations people with existing hypertension and diabetes mellitus: the Diabetes Risk Evaluation and Microalbuminuria (DREAM 3) randomized controlled trial." CMAJ. 2006 Apr 25;174(9):1267-71. Epub 2006 Apr 4.

BACKGROUND: First Nations people with diabetes mellitus and hypertension are at greater risk of renal and cardiovascular complications than are non-native patients because of barriers to health care services. We conducted this randomized controlled trial to assess whether a community-based treatment strategy implemented by home care nurses would be effective in controlling hypertension in First Nations people with existing hypertension and type 2 diabetes. METHODS: We compared 2 community-based strategies for controlling hypertension in First Nations people with existing hypertension and diabetes. In the intervention group, a home care nurse followed a predefined treatment algorithm of pharmacologic antihypertensive therapy. In the control group, treatment decisions were made by each subject's primary care physician. The primary outcome measure was the difference between the 2 groups in the change in systolic blood pressure after 12 months. Secondary

outcome measures were the change in diastolic blood pressure over time, the change in urine albumin status and the incidence of adverse events. RESULTS: Both groups experienced a significant reduction in systolic blood pressure by the final visit (by 24.0 [standard deviation (SD) 13.5] mm Hg in the intervention group and by 17.0 [SD 18.6] mm Hg in the control group); p < 0.001 in each case). However, the difference between the 2 groups in this change was not significant. Patients in the intervention group had a larger decrease in diastolic blood pressure over time than did those in the control group (by 11.6 [SD 10.6] mm Hg v. 6.8 [SD 11.1] mm Hg respectively; p = 0.05). The groups did not differ significantly in terms of changes in urine albumin excretion or incidence of adverse events. INTERPRETATION: High rates of blood pressure control in the community were achieved in both groups in the DREAM 3 study. The addition of a home care nurse to implement a treatment strategy for blood pressure control was more effective in lowering diastolic than systolic blood pressure compared with home care visits for blood pressure monitoring alone and follow-up treatment by a family physician.

Trento, M., M. Basile, et al. "A randomised controlled clinical trial of nurse-, dietitian- and pedagogist-led Group Care for the management of Type 2 diabetes." J Endocrinol Invest. 2008 Nov;31(11):1038-42.

AIM: To verify if Group Care, a model to manage Type 2 diabetes (T2DM) by systemic continuing group education, can be administered by nurses and dieticians under pedagogic guidance, and improve metabolic control, quality of life, Locus of Control, and insulin resistance. MATERIAL AND SUBJECTS: Twenty-five patients with non-insulin-treated T2DM were randomized to Group Care and 24 to continued habitual individual care and education delivered by a diabetes specialist and pedagogist, respectively. Six nurses and 1 dietician received training by an accredited programme, a detailed operating manual and pedagogical supervision throughout the study. Follow-up was for 2 yr and included measurements of fasting blood glucose, glycated hemoglobin (HbA1c), body mass index, waist circumference, lipids, creatinine, blood pressure, serum insulin, homeostasis model assessment (HOMA) index of insulin resistance, health behaviors, quality of life, state and trait anxiety, and Locus of Control. RESULTS: One patient on Group Care and 3 controls dropped out. At the end of study, the patients on Group Care had lower HbA1c (7.6+/-0.8 vs 8.4+/-1.3, p<0.05), insulin (18.0+/-9.6 vs 24.3+/-13.7, p<0.001), HOMA index (6.9+/-5.4 vs 9.2+/-6.6, p<0.05), and fatalistic attitude (17.2+/-5.9 vs 24.9+/-4.2, p<0.001) and better quality of life (65.0+/-11.0 vs 78.4+/-19.6, p<0.001) than controls. CONCLUSIONS: Group Care delivered by trained nurses and dietitian is associated with better outcomes than those obtained by a medically and pedagogically qualified team. It may offer a model for health operators to re-organize clinical practice and for patients to improve lifestyle and strengthen the therapeutic alliance with their carers.

Tshiananga, J. K., S. Kocher, et al. "The effect of nurse-led diabetes self-management education on glycosylated hemoglobin and cardiovascular risk factors: a meta-analysis." Diabetes Educ. 2012 Jan-Feb;38(1):108-23. doi: 10.1177/0145721711423978. Epub 2011 Nov 23.

PURPOSE: The purpose of this meta-analysis was to determine the effect of nurse-led diabetes self-management education (DSME) on blood glucose control and cardiovascular risk factors. METHODS: The electronic databases PubMed and ISIS Knowledge were searched for relevant randomized controlled studies published between 1999 and 2009. Effect size was calculated for change in A1C, blood pressure, and lipid levels using both fixed- and random-effects models. Subgroup analyses were performed on patient age, gender, diabetes type, baseline A1C, length of follow-up, and study setting. RESULTS: A total of 34 randomized controlled trials with a combined cohort size of 5993 patients was identified. Mean patient age was 52.8 years, 47% were male, and mean A1C at baseline was 8.5%. Mean change in A1C was a reduction by -0.70% for nurse-led DSME versus -0.21% with usual care (UC). This corresponded to an effect size of 0.506, using a random-effects model for nurse-led DSME versus UC. Effect size was significantly associated with patient age older than 65 years and with duration of follow-up. Nurse-led DSME was also associated with improvements in cardiovascular risk factors, particularly among male patients, among those with good glycemic control, and in studies conducted in the United States. CONCLUSIONS: Nurse-led DSME is associated with improved glycemic control, demonstrating that programs are most effective among seniors and with follow-up periods of 1 to 6 months. Future programs tailored to the needs of patients younger than 65 years may improve the impact of DSME on blood glucose.

Vetter-Smith, M., J. Lemaster, et al. "Providing diabetes self-management support in rural primary care clinics with nurse partners." West J Nurs Res. 2012 Dec;34(8):1023-42. doi: 10.1177/0193945911436106. Epub 2012 Feb 6.

This study examined the roles and effectiveness of nurse partner-provided diabetes self-management (DSM) support in five rural primary care

clinics. There were two to nine providers and one nurse partner in each clinic; nurses were licensed practical nurses (LPNs) in all but one clinic. Interviews with providers and observations of patient interactions assessed nurse roles, clinic processes, and communication patterns. Using immersion-crystallization methods, three major themes explained nurse partner role variation: "gatekeeper" role of providers, compression of time and space within clinic work flow, and nurses' educational background and experience. While nurses' education and experience were important, clinics where providers facilitated nurse participation in DSM support through focused communication and commitment of time and space most effectively integrated DSM support into their practice. Some quantitative measures improved; notably glycated hemoglobin level and patients' frequency of blood glucose measurement. Study findings provide guidance on using nurses in primary care clinics to provide DSM.

Walker, A., C. James, et al. "Evaluation of a diabetes referral pathway for the management of hypoglycaemia following emergency contact with the ambulance service to a diabetes specialist nurse team." Emerg Med J. 2006 Jun;23(6):449-51.

OBJECTIVES: To evaluate the effectiveness of ambulance crew referral of patients treated for acute hypoglycaemia, to a diabetes specialist nurse (DSN) team. Patients were assessed by the ambulance service and did not attend an emergency department. METHODS: For a 3 month period patients were referred from two areas of West Yorkshire by the ambulance service to specialist diabetes teams. The DSNs contacted the patients within 7 days by telephone and arranged further review if necessary. Satisfaction questionnaires were sent to patients. RESULTS: Thirty eight patients were referred and all were reviewed by telephone; 30 (79%) also required a clinic review appointment. Warning signs of hypoglycaemia were identified by 21 (55%) patients, but 14 (37%) had none (three had incomplete data). Twelve patients had had a self-treated episode in the previous 6 months; nine patients had had three or more. Fifteen (39%) patients had called an emergency ambulance for similar reasons in the previous 6 months (27 "999" calls). Twenty patients (53%) had their drug treatment altered at a clinic appointment and 14 (37%) required ongoing review. Twenty six patients returned the satisfaction questionnaire; of these 88% agreed or strongly agreed that they had improved their understanding of hypoglycaemia and 73% felt more able to treat a hypoglycaemic episode in the future. Patient satisfaction with this care pathway was high. CONCLUSIONS: The ambulance service can coordinate successful referral of patients with episodes of acute hypoglycaemia to a DSN-led service. Patients often required treatment review. They valued this service and felt more confident managing their diabetes.

Wallymahmed, M. E., C. Morgan, et al. "Nurse-led cardiovascular risk factor intervention leads to improvements in cardiovascular risk targets and glycaemic control in people with Type 1 diabetes when compared with routine diabetes clinic attendance." Diabet Med. 2011 Mar;28(3):373-9. doi: 10.1111/j.1464-5491.2010.03224.x.

AIM: To compare the effects of a dedicated cardiovascular risk factor clinic run by a nurse consultant with routine diabetes clinic attendance in achieving glycaemic and cardiovascular risk targets in patients with Type 1 diabetes. METHODS: Eighty-one patients (45 male, mean age 34.6 years, mean duration of diabetes 15 years) with an HbA(1c) >/= 8% (64 mmol/mol) and at least one other risk factor for the development of cardiovascular disease were randomized to receive either routine care or intensive nurse-led cardiovascular risk factor intervention. HbA(1c) , non-fasting lipid profile, blood pressure, weight, BMI and insulin dose were recorded at baseline, 6, 12 and 24 months. RESULTS: At baseline there were no differences between the groups. At 12 months, there were significant improvements in the nurse-led cardiovascular risk factor group: HbA(1c) [10.1% (87 mmol/mol) vs. 9.3% (78 mmol/mol), $P < 0.001$], total cholesterol (5.8 vs. 4.3 mmol/l, $P < 0.001$), systolic blood pressure (127 vs. 115 mmHg, $P < 0.001$) and diastolic blood pressure (71 vs. 65 mmHg, $P < 0.05$). Improvements were maintained in all variables at 24 months except diastolic blood pressure. In the routine group, only total cholesterol improved significantly (5.8 vs. 5.2 mmol/l, $P < 0.01$) after 12 months and this was maintained at 24 months. CONCLUSION: A nurse consultant cardiovascular risk factor clinic has a beneficial effect on cardiovascular risk targets in Type 1 diabetes, probably attributable to the increased use of lipid-lowering and anti-hypertensive agents and this was maintained at 24 months. Glycaemic control also improved.

Welch, G., J. Garb, et al. "Nurse diabetes case management interventions and blood glucose control: results of a meta-analysis." Diabetes Res Clin Pract. 2010 Apr;88(1):1-6. doi: 10.1016/j.diabres.2009.12.026. Epub 2010 Feb 8.

We conducted a meta-analysis of studies reporting diabetes case management interventions to examine the impact of case management on blood glucose control (HbA1c). Databases used for the search included Medline, PubMed, Cochrane EPOC,

Cumulative Index to Nursing & Allied Health Literature database guide (CINAHL), and PsychInfo. A composite estimate of effect size was calculated using a random effects model and subgroup analyses were conducted. Twenty-nine salient studies involving 9397 patients had sufficient data for analysis. Mean patient age was 63.2 years, 49% were male, and ethnicity/race was 54% White. Type 2 diabetes was the focus in 91% of studies. Results showed a large overall effect size favoring case management intervention over controls or baseline values on HbA1c (ES=0.86, 95%CI: 0.52-1.19, Z=5.0, p<0.001). This corresponds to a mean HbA1c reduction of 0.89 (95%CI: 0.63-1.15). Subgroup analyses showed clinical setting, team composition, and baseline HbA1c were important predictors of effect size, but not diabetes self-management education which was poorly described or absent in most diabetes case management interventions examined. Nurse-led case management provides an effective clinical strategy for poorly controlled diabetes based on a meta-analysis of clinical trials focusing on blood glucose control.

Whittemore, R., G. D. Melkus, et al. "A nurse-coaching intervention for women with type 2 diabetes." Diabetes Educ. 2004 Sep-Oct;30(5):795-804.

PURPOSE: The purpose of this pilot study was to determine the efficacy of a 6-month nurse-coaching intervention that was provided after diabetes education for women with type 2 diabetes. METHODS: In this pilot study, 53 women were randomized to the nurse-coaching intervention or a standard care control condition. The nurse-coaching intervention consisted of 5 individualized sessions and 2 follow-up phone calls over 6 months. The nurse-coaching sessions included educational, behavioral, and affective strategies. Data were collected on physiologic adaptation (hemoglobin A1c [A1C] and body mass index [BMI]), self-management (dietary and exercise), psychosocial adaptation (diabetes-related distress and integration), and treatment satisfaction at baseline, 3 months, and 6 months. RESULTS: Women in the treatment group demonstrated better diet self-management, less diabetes-related distress, better integration, and more satisfaction with care, and had trends of better exercise self-management and BMI. The A1C levels improved in both groups at 3 months, yet the difference between the groups was not significant. Attendance at nurse-coaching sessions was 96%. CONCLUSIONS: This nurse-coaching intervention demonstrates promise as a means of improving self-management and psychosocial outcomes in women with type 2 diabetes.

Wilkinson, J., J. Carryer, et al. "Evaluation of a diabetes nurse specialist prescribing project." J Clin Nurs. 2014 Aug;23(15-16):2355-65. doi: 10.1111/jocn.12517. Epub 2013 Dec 20.

AIMS AND OBJECTIVES: To evaluate the diabetes nurse specialist prescribing project with the aim of determining whether diabetes nurse specialist prescribing is safe and effective and to inform the implementation and extension of registered nurse prescribing. BACKGROUND: Registered nurses in many countries are able to prescribe medicines, but in New Zealand, prior to the diabetes nurse specialist project, nurse practitioners were the only nurses who could prescribe medicines. New regulations allowed the nurses to prescribe a limited number of prescription medicines. DESIGN: The study was a process and outcome clinical programme evaluation. METHODS: The project took place between April-September 2011 and involved 12 diabetes nurse specialist in four localities. Quantitative data were collected from clinical records maintained by the diabetes nurse specialist for the project (1274 patients and 3402 prescribing events), from surveys with stakeholders (general practitioners, n = 30; team members, n = 19; and patients, n = 89) and audits from patient notes (n = 117) and prescriptions (n = 227), and qualitative data from interviews with project participants (n = 18) and patients (n = 19). All data were analysed descriptively. RESULTS: Diabetes nurse specialist prescribing was determined to be safe, of high quality and appropriate. It brought important benefits to the effectiveness of specialist diabetes services, was acceptable to patients and was supported by the wider healthcare team. CONCLUSIONS: These findings are consistent with the findings reported in the international literature about nurse prescribing in a range of different practice areas. Clarification of the education and competence requirements and resourcing for the ongoing supervision of nurses is recommended if the prescribing model is to be extended. RELEVANCE TO CLINICAL PRACTICE: Diabetes nurse specialist prescribing improved access to medicines by providing a more timely service. Nurses felt more satisfied with their work because they could independently provide a complete episode of care. As novice prescribers, nurses need to be well prepared educationally and have access to supportive clinical supervision.

Williams, R., F. Rapport, et al. "The prevention of type 2 diabetes: general practitioner and practice nurse opinions." Br J Gen Pract. 2004 Jul;54(504):531-5.

BACKGROUND: Primary prevention of type 2 diabetes is now possible with lifestyle or pharmacological interventions in people who are at risk. Primary care would seem to be the legitimate setting for this to take place. AIM: To explore the views of general practitioners and practice nurses

about the detection and management of people at risk of developing type 2 diabetes. DESIGN OF STUDY: Qualitative study. SETTING: One local health board area in Wales. METHOD: General practitioners and practice nurses participated in multi-professional focus groups, and opinions of participants were analysed into themes and sub-themes according to focus group content analysis methodology to search for 'markers of text'. RESULTS: Participants from 21 practices were involved. Participants' opinions on the detection and management of individuals at risk of developing type 2 diabetes were polarised into those who considered these activities inappropriate for primary care and those who were already engaged in the detection, management and follow-up of these individuals. For the former, existing workload, the questionable role of primary care as a 'screening service', lack of resources, and conflict and concern about increasing specialisation were given as justification. Those already engaged in these activities emphasised their importance but were also concerned with the lack of available resources. Other concerns were the perceived low motivation of patients to modify their lifestyle and the unnecessary medicalisation of the precursor conditions of impaired glucose tolerance and impaired fasting glycaemia. The prevention of type 2 diabetes was seen as largely the responsibility of other agencies such as health promotion and education. CONCLUSION: The often strongly held views about this topic are at least partly influenced by current pressures on primary care. To make the primary prevention of type 2 diabetes a reality, either practitioners need to be motivated and resourced to carry out preventive strategies or alternative methods must be identified.

Woodward, A., M. Wallymahmed, et al. "Successful cardiovascular risk reduction in Type 2 diabetes by nurse-led care using an open clinical algorithm." Diabet Med. 2006 Jul;23(7):780-7.

AIM: To implement a protocol-driven, nurse-led cardiovascular risk reduction clinic using an open clinical algorithm. The primary aim of the clinic was to optimize blood pressure (BP) control; secondary aims were to reduce modifiable cardiovascular risk factors. METHODS: We studied 110 people with Type 2 diabetes attending a diabetes out-patient centre at University Hospital Aintree, Liverpool. Patients taking one or more antihypertensive drugs were selected for referral to the nurse-led clinic if BP was > 140/85 mmHg; there was no age threshold. An open clinical algorithm was designed to direct the nurse on the use of antihypertensive, statin and aspirin therapy plus lifestyle advice and concordance. RESULTS: Thirty-one percent of patients attending for a first visit to the nurse-led clinic had BP within target when measured to British Hypertension Society standards out of the consultant clinic. Mean BP was 150/76 mmHg compared with 178/88 mmHg (P < 0.001). Subsequently, BP was reduced to 130/68 mmHg (P < 0.001), this reduction being sustained at review 9 months later (mean BP 133/67 mmHg), with 87 (79%) achieving BP <or= 140/85 mmHg. Treatment modalities were adjusted to reduce cardiovascular risk, including antihypertensive medication, lipid-lowering therapy and antiplatelet therapy. High-density lipoprotein-cholesterol improved from 1.2 +/- 0.5 mmol/l to 1.4 +/- 0.5 mmol/l (P = 0.004). The number of patients with microalbuminuria decreased from 41 (47%) to 25 (28%) (P = 0.02), with a fall in urinary albumin:creatinine ratio from 3.0 (1.3-7.9) to 1.8 (1.0-5.0) mg/mmol (P = 0.01). The number of smokers decreased from 22 (20%) to 14 (13%) (P = 0.01). Although not included as an intervention in the protocol, HbA1c improved to 8.1 +/- 1.6% from 8.7 +/- 1.6% (P < 0.001). CONCLUSION: A protocol-driven, nurse-led clinic using an open clinical algorithm can be used effectively to manage cardiovascular risk reduction in Type 2 diabetes.

The above contents are the collected information from Internet and public resources to offer to the people for the convenient reading and information disseminating and sharing.

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