



Diabetes Dispatch

Highlights of the 2009 American Diabetes Association Standards of Medical Care

Diagnosis of Diabetes:

- Symptoms of diabetes and a random blood glucose of ≥ 200 mg/dl*
- Fasting blood glucose (FBG) ≥ 126 mg/dl*
- 2-hour plasma glucose ≥ 200 mg/dl during an OGTT (oral glucose tolerance test)*
- “It is likely that the A1C test will become the preferred diagnostic test for diabetes, diagnostic cut points were being discussed at the time the 2009 standards were published.”

**In the absence of unequivocal hyperglycemia, these criteria should be confirmed by repeat testing on a different day.*

Diagnosis of Pre-Diabetes:

Impaired Fasting Glucose (IFG):

- FBG between 100 and 125 mg/dl

Impaired Glucose Tolerance (IGT):

- 2-hour plasma glucose after an OGTT between 140 and 199 mg/dl

Key concepts in setting glycemic goals:

- Goals should be individualized for the patient based on duration of diabetes, age/life expectancy, comorbid conditions, known CVD or advanced microvascular complications, hypoglycemia unawareness, individual patient considerations

- A1C goals above or below 7.0% may be appropriate for individual patients

Prevention of Long-Term Complications:

- BP should be measured at every routine visit (goal <130/80), ACE inhibitors and ARBs are recommended initial BP treatment
- In adult patients screen for lipid disorders at least annually, more often if needed to achieve cholesterol goals, use statin therapy if indicated
- Use aspirin therapy (if appropriate)
- Advise all patients not to smoke
- Perform an annual test for the presence of microalbumin (to reduce risk of nephropathy optimize BG & BP control)
- Annual dilated eye exam (to reduce risk of retinopathy optimize BG & BP control)
- Daily self foot care and an annual foot exam by a provider (to reduce the risk of amputation and ulceration)

Adopted from: American Diabetes Association. Standards of Medical Care for Patients With Diabetes. *Diabetes Care*. 2009;S1: S13-S61.

Goals of Treatment

A1C	<7.0%
Pre prandial BG	90-130 mg/dl
Post Prandial BG	<180 mg/dl
Blood Pressure	<130/80 mmHg
Total Cholesterol	<200 mg/dl
LDL	<100 mg/dl or < 70 mg/dl if very high risk patient
Triglycerides	<150 mg/dl
HDL	>40 mg/dl for males >50 mg/dl for females

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Objectives:

- Identify the ADA Standards of Medical Care in Diabetes
- Discuss immunizations rates among Alaskans and the impact pharmacists can have
- Review the cost of commonly used oral diabetes medications

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Immunization rates among Alaskans with diabetes, 2004-2006

Compiled by Gail Stolz

The Alaska Behavioral Risk Factor Surveillance System (AK BRFSS) is part of a nationwide effort to systematically collect information about adult health behaviors and conditions in the United States. Immunizations for vaccine preventable illnesses are an important component of health maintenance activities for adults and especially adults with diabetes. The Alaska Immunization Program (AIP) and the Centers for Disease Control and Prevention Advisory Committee on Immunization Practices (CDC) have similar recommendations for annual influenza vaccination (Table 1). Alaska's pneumococcal disease vaccination recommendations differ (Table 1) due to research in the 1980's showing that Alaska Natives had high pneumococcal disease rates. A study was conducted in 2007 to assess the continuing need for an Alaska-specific recommendation. Expected in 2009 are new recommendations from AIP which will **align the pneumococcal vaccine recommendations with the CDC's**.^{1,2,3}

Vaccine-preventable disease	Alaska Immunization Program	CDC
Influenza vaccine	Annually for adults ≥ 50 and adults 18-64 with high risk conditions	Annually for adults ≥ 50 and adults 18-64 with high risk conditions
Pneumococcal disease vaccine	Initial vaccination for adults ≥ 55 years or at time of diagnosis with chronic illness with boosters every 6 years	At least one lifetime dose for adults ≥ 65 and adults 18-64 with high risk conditions

All of the data presented in this report were generated by the 2004-2006 AK BRFSS, which included questions on influenza and pneumococcal disease immunizations.⁵ In Alaska in 2004-2006, immunization rates for both influenza and pneumococcal disease increased significantly with age. The vaccination rates for pneumococcal disease were slightly higher than the influenza rates (Table 2).

	Influenza vaccine in past year (95% confidence interval)	Ever had a pneumococcal vaccine (95% confidence interval)
18-49	16% (14%-18%)	28% (26%-30%)
50-64	27% (24%-30%)*	38% (35%-41%)*
≥ 65	60% (55%-64%)*	63% (58%-67%)*
All ≥ 18	23% (22%-25%)	34% (32%-35%)

* This rate is significantly higher than the rate for the preceding age group.

For Alaskans with diabetes, the influenza immunization rate was about ten percentage points higher than the pneumococcal disease immunization rate. (Table 3).

	Influenza (95% confidence interval)	Pneumococcal disease (95% confidence interval)
Diabetes	63% (56%-69%)	53% (46%-60%)

Numbers not vaccinated

AK BRFSS surveys in 2004-2006 indicate that more than 9,000 adult Alaskans with diabetes had not obtained an influenza vaccination in the previous year, and about 11,500 had never obtained a pneumococcal disease vaccination. Among adults with diabetes in the age, race or regional subgroups, two-thirds of young adults 18-44 and more than half of the Gulf Coast residents had not received an annual flu vaccination. Also, half of adults 45-64, Alaska Native/American Indians (AK Native), Gulf Coast region residents and Southeast region residents had never had a pneumococcal disease vaccination (Table 4).

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Immunization rates among Alaskans with diabetes, 2004-2006

Table 4: Estimated numbers of Alaskans with diabetes, percentages vaccinated, numbers vaccinated and numbers not vaccinated with **influenza and pneumococcal vaccine** during the previous year by age, racial group, or AK BRFSS region, AK BRFSS 2004-2006

	Population with diabetes	Influenza vaccine			Pneumococcal vaccine		
		Percent vaccinated (95% CI)	Number vaccinated	Number <i>never</i> vaccinated	Percent vaccinated (95% CI)	Number vaccinated	Number <i>never</i> vaccinated
Age							
18-44	3,634	32% (18%-51%)	1,177	2,457	DSU		
45-64	13,599	64% (55%-73%)	8,757	4,841	45% (35%-55%)	6,065	7,534
≥ 65	7,322	72% (61%-81%)	5,287	2,036	74% (63%-82%)	5,382	1,940
Race							
White	18,821	62% (54%-69%)	11,575	7,246	54% (45%-62%)	10,069	8,752
AK Native	3,352	75% (61%-85%)	2,521	831	46% (29%-64%)	1,542	1,810
AK BRFSS region							
Anchorage/Mat-Su	13,923	68% (56%-77%)	9,398	4,525	56% (44%-68%)	7,797	6,126
Gulf coast	3,209	49% (39%-60%)	1,582	1,627	46% (35%-57%)	1,480	1,730
Southeast	2,475	59% (47%-71%)	1,463	1,012	48% (35%-61%)	1,191	1,285
Rural	1,851	69% (55%-81%)	1,285	567	54% (40%-68%)	1,007	844
Fairbanks and vicinity	3,096	55% (43%-66%)	1,700	1,396	51% (39%-63%)	1,585	1,511
Total	24,555	63% (56%-69%)	15,364	9,191	53% (46%-60%)	13,024	11,531

† DSU stands for data statistically unreliable; the number of respondents with this characteristic was too small to provide a reliable result.

Factors associated with immunization rates

Generally, three factors have been found that have an impact on vaccination: convenience, provider recommendation, and individual attitudes toward immunization.^{6,7,8,9}

Pharmacists and immunizations

Pharmacists can have a substantial impact on adult immunization rates. One simple strategy is to ask all customers filling prescriptions for drugs associated with diseases that put them at risk (e.g., diabetes, heart disease, or asthma) if they have ever been vaccinated against pneumococcal disease or if they have received their annual flu vaccine. A more active strategy is to give immunizations. Published reports have found significantly higher immunization rates in states where pharmacists provide vaccines.^{10,11} In Alaska, 12 AAC 40.983(d) establishes a mechanism for pharmacists to provide adult immunizations.

The CDC has issued guidance for adult immunization programs in nontraditional settings.¹²

1. Provide risk and benefit information and education for people seeking an immunization. Follow the vaccine handling and storage recommendations that are included in the package inserts.
2. Obtain an immunization history before administering the vaccine.
3. Assess for the presence of contraindications.
4. Maintain records: record the recipient's name, age, pre-existing health conditions, type of vaccine, dose, site and route of administration, name of vaccine provider, date vaccine was administered, manufacturer and lot number, and date that the next dose is due.
5. Maintain training and licensure for administering vaccines.
6. Maintain training in recognizing adverse reactions and keep the equipment needed to respond to an adverse reaction on site.

With training and preparation, pharmacists can be significant partners in the effort to protect Alaskans from vaccine-preventable diseases.

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Cost Comparison of Common Oral Medications for Diabetes

(Federal Supply Schedule Pricing as of 2-18-09)

Choice of a specific diabetes medication is often considered based on their effectiveness in lowering glucose, other effects outside of lowering glucose that may reduce long-term complications, safety profiles, tolerability, ease of use, and expense. Although cost is not the first consideration when selecting therapy for patients with diabetes it is a necessary component of consideration for both the patient and health care system. The table below reviews the cost of the most commonly used oral diabetes medications. The cost presented are based on the federal supply pricing schedule available to Indian Health Service facilities and can assist in making formulary decisions.

Generic name Oral	Brand name	Cost/Tablet	Cost/day (Usual Dose)
Metformin 500 mg tab	Glucophage 500 mg tab	\$0.03/tab	\$0.06 (BID dosing)
Metformin 850 mg tab	Glucophage 850 mg tab	\$0.04/tab	\$0.08 (BID dosing)
Metformin 1000 mg tab	Glucophage 1000 mg tab	\$0.05/tab	\$0.10 (BID dosing)
Metformin XR 500 mg tab	Glucophage XR 500 mg	\$0.04/tab	\$0.04-0.16 (1-4 daily)
Glipizide 5 mg tab	Glucotrol 5 mg tab	\$0.02/tab	\$0.02 (daily dosing)
Glipizide 10 mg tab	Glucotrol 10 mg tab	\$0.03/tab	\$0.03 (daily dosing)
Glipizide ER 5 mg tab	Glucotrol XL 5 mg tab	\$0.14/tab	\$0.14 (daily dosing)
Glipizide ER 10 mg tab	Glucotrol XL 10 mg tab	\$0.28/tab	\$0.28 (daily dosing)
Glyburide 5 mg tab	Micronase 5 mg tab	\$0.22/tab	\$0.22 (daily dosing)
Glimepiride 1 mg tab	Amaryl 1 mg tab	\$0.11/tab	\$0.11 (daily dosing)
Glimepiride 2 mg tab	Amaryl 2 mg tab	\$0.06/tab	\$0.06 (daily dosing)
Glimepiride 4 mg tab	Amaryl 4 mg tab	\$0.27/tab	\$0.27 (daily dosing)
Pioglitazone 15 mg tab	Actos 15 mg tab	\$1.06/tab	\$1.06 (daily dosing)
Pioglitazone 30 mg tab	Actos 30 mg tab	\$1.88/tab	\$1.88 (daily dosing)
Pioglitazone 15 mg tab	Actos 45 mg tab	\$2.07/tab	\$2.07 (daily dosing)
Rosiglitazone 2 mg tab*	Avandia 2mg tab	\$1.47/tab	\$1.47 (daily dosing)
Rosiglitazone 4 mg tab*	Avandia 4mg tab	\$2.18/tab	\$2.18 (daily dosing)
Rosiglitazone 8mg tab*	Avandia 8mg tab	\$3.97/tab	\$3.97 (daily dosing)
Chlorpropamide 250 mg tab	Diabinese 250 mg	\$0.10/tab	\$0.10 (daily dosing)
Miglitol 25 mg tab	Glyset 25 mg tab	\$0.45/tab	\$1.35 (TID dosing)
Miglitol 50 mg tab	Glyset 50 mg tab	\$0.48/tab	\$1.44 (TID dosing)
Nateglinide 120 mg tab	Starlix 120 mg tab	\$0.80/tab	\$2.40 (TID dosing)
Repaglinide 0.5 mg tab*	Prandin 0.5 mg tab	\$0.78/tab	\$2.34 (TID dosing)
Repaglinide 1 mg tab*	Prandin 1 mg tab	\$0.79/tab	\$2.37 (TID dosing)
Repaglinide 2 mg tab*	Prandin 2 mg tab	\$0.79/tab	\$2.37 (TID dosing)

* Item is non formulary at ANMC

Continuing Education Quiz

Diabetes Dispatch: Spring 2009

- 1) Diabetes can be diagnosis when
 - a. fasting blood glucose \geq 140 mg/dl
 - b. symptoms of diabetes and a random blood glucose \geq 200 mg/dl
 - c. a 2-hour plasma glucose \geq 140 during an OGTT
 - d. all of the above

- 2) What is the blood pressure goal for a patient with diabetes?
 - a. 140/90
 - b. 150/100
 - c. 110/70
 - d. 130/80

- 3) True or False – A1C goals above or below 7.0% may be appropriate for individual patients.

- 4) All of the following should be considered when selecting an A1C goal for a patient EXCEPT:
 - a. duration of diabetes
 - b. whether you like the patient
 - c. age/life expectancy
 - d. hypoglycemia unawareness

- 5) Which recommendations will help prevent the long term complications of diabetes?
 - a. Daily self foot care and annual foot exam by a provider
 - b. Use aspirin therapy (if appropriate)
 - c. Advise patient not to smoke
 - d. All of the above

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Circle one: Pharmacist Technician

- 6) What is the immunization rate for adult Alaskan (\geq 18) with diabetes for **influenza** vaccine according to the AK BRFSS 2004-2006?
 - a. 40%
 - b. 63%
 - c. 53%
 - d. 100%

- 7) What is the immunization rate for adult Alaskan (\geq 18) with diabetes for **pneumococcal** vaccine according to the AK BRFSS 2004-2006?
 - a. 40%
 - b. 63%
 - c. 53%
 - d. 100%

- 8) What three factors have been found to have the greatest impact on vaccinations?
 - a. convenience, provider recommendation, and individual attitudes toward immunizations
 - b. provider recommendation, pain free delivery, illness
 - c. convenience, friend recommendation, pain free delivery
 - d. all of the above

- 9) True or False – Pharmacists can be significant partners in the effort to protect Alaskans from vaccine-preventable disease.



LESSON EVALUATIONS

To obtain CPE credit for this lesson you must answer the questions on the quiz (70% correct required) and return the quiz. Should you score less than 70%, you will be asked to repeat the quiz. In May and

November of each year we will mail a statement of credit, unless otherwise arranged with the AkPhA office.

This program furnishes 1.0 hour CPE (0.1 CEU) credit per lesson.

EXPIRATION FOR CREDIT: Pharmacist and technicians may receive credit for completing this course if returned by March 25, 2012. The ALASKA PHARMACISTS ASSOCIATION is accredited by the Accreditation Council for Pharmacy Education as a provider of continuing pharmacy education.

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	Poor			Excellent
1) Relevance of topic to practice	1	2	3	4 5
2) Author's ability to communicate	1	2	3	4 5
3) Author's knowledge of topic	1	2	3	4 5
4) Appropriateness of topic	1	2	3	4 5

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