Trends in Glyburide Prescribing: A Five-Year Retrospective Claims Data Analysis in a Large Regional Healthcare Organization

Kristen Herzik, PharmD, BCPS[1,2], Eric J. Ip, PharmD, APh, BCPS, CSCS, CDE, FCSHP[2], Danielle Thanh, PharmD[2], Shadi Doroudgar, PharmD, APh, BCPS, CGP, BCPP[2], Mitchell Barnett, PharmD, MS[2]

[1]Sharp Healthcare, 8695 Spectrum Center Blvd, San Diego, CA, [2]Touro University California, 1310 Club Drive, Vallejo, CA

BACKGROUND

Use of potentially inappropriate medications (PIMs)[1] in elderly are avoidable and result in costly outpatient, inpatient and emergency encounters. Glyburide for example, has been directly linked to hypoglycemic events.

In 2012, the American Geriatrics Society's Beers Criteria[2] recommended to avoid use of glyburide in the elderly.

Initiatives within a health-system can modify prescribing patterns to mitigate use of PIMs; primary care settings readily adopting initiatives or "best practices" may serve as benchmarks.

OBJECTIVES

Primary: Evaluate trends of glyburide use in elderly type 2 diabetes mellitus (T2DM) patients at Sharp Rees-Stealy (SRS) clinics prior to, during and after the 2012 Beers Criteria update

Secondary:

1) Evaluate use of glyburide alternatives (e.g., glipizide and glimepiride) in SRS clinics prior to, during and after the 2012 Beers Criteria update; and
2) Analyze trends of glyburide, glipizide, and glimepiride use among different SRS clinics by region
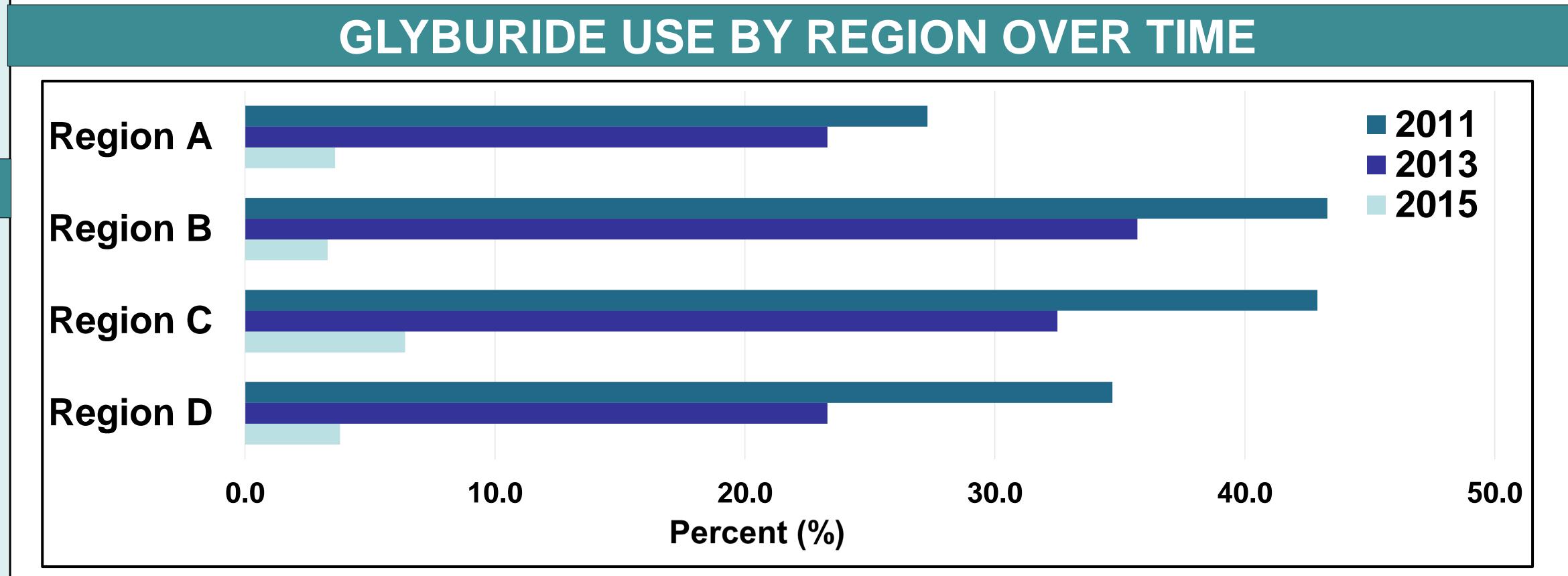
METHODS

Multi-centered, retrospective cohort study of 3,005 T2DM patients, 65 years or older from four SRS regional clinics

Prescription fill history of the sulfonylureas listed above were collected from pharmacy claims data along with comorbidity (Elixhauser) and demographic information

Inclusion Criteria:

- Age ≥ 65 years, filled at least 90 days of glyburide, glipizide or glimepiride in 2011, 2013, and/or 2015
- Documented ICD-9 or ICD-10 code for T2DM in the year before and after filling above medication(s)
- Alive during subsequent year

CHARACTERISTICS OF T2DM PATIENTS OVER TIME

	2011 (n=1,026)	2013 (n=1,039)	2015 (n=940)
Age (Mean ± SD)	75.6 ± 8.2	75.6 ± 8.1	75.4 ± 7.6
Male	53.3%	54.5%	54.4%
White	48.5%	45.5%	43.6%
Comorbidities (Mean ± SD)	3.1 ± 2.3	2.6 ± 1.6	1.6 ± 1.8
Glipizide Use	53.8%	56.1%	71.3%
Glimepiride	12.5%	20.1%	27.7%
Glyburide Use	**35.8%**	**27.7%**	**3.0%**

GLYBURIDE USE BY REGION OVER TIME

MULTIVARIATE (ADJUSTED) ODDS OF GLYBURIDE USE OVER TIME

Year=2011	Odds Ratio	95% CI	P-Value
Region A	**0.76**	0.57 – 0.99	0.045
Region B	1.18	0.94 – 1.60	0.26
Region C	1.26	0.95 – 1.69	0.12
Region D	**0.89**	0.82 – 0.95	<0.01
Year=2013	**Odds Ratio**	**95% CI**	**P-Value**
Region A	**0.63**	0.46 – 0.87	<0.01
Region B	**1.41**	1.02 – 1.96	0.04
Region C	1.23	0.90 – 1.68	0.19
Region D	**0.92**	0.84 – 0.98	0.03
Year=2015	**Odds Ratio**	**95% CI**	**P-Value**
Region A	0.85	0.38 – 1.91	0.69
Region B	0.70	0.31 – 1.56	0.38
Region C	1.65	0.83 – 3.31	0.16
Region D	1.01	0.84 – 1.22	0.89

- Multivariate differences controlling for patient age, gender, race and comorbidity (Elixhauser)
- Effects coding (referent group = average clinic)

DISCUSSION

Unadjusted glyburide use decreased across each study year, whereas unadjusted use of glipizide and glimepiride increased.

Unadjusted glyburide use also significantly declined across all regions over time.

Glyburide use differed across regions.

These differences remained after controlling for differences in patient demographics and comorbidity.

For example, in 2013, patient adjusted glyburide use varied from 37% less than average to 41% greater than average for study sites.

CONCLUSION

Rates of glyburide use have steadily decreased since the 2012 Beers Criteria recommendation to avoid its use, while rates of safer second generation sulfonylureas have increased.

However, glyburide use among specific regions within a large health-system may differ greatly.

Significant decrease in glyburide use may demonstrate successful adoption of evidence-based medicine at a large multi-regional site to change prescribing habits.

Best practice factors may include more clinical pharmacists, additional prescriber training, newer available equipment, and/or more readily accessible encounters for patients.

REFERENCES

1. O'Mahony D, O'Sullivan D, Byme S, et al. (2015). STOPP/START criteria for potentially inappropriate prescribing in older people: version 2. Age and Ageing, 44(2). 213-218. http://doi.org/10.1093/ageing/afu.145.
2. The American Geriatrics Society 2015 Beers Criteria Update Expert Panel. American Geriatrics Society 2015 Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults. J Am Geriatr Soc. 2015 Nov;63(11):2227-46.