

Welcome to Phoenix Interactive Learning Session



Topic

Telemedicine-Technology to Delivery of Care



Objectives

- Update on Tele-Health Structure
- Overview of the Joslin Vision Network



Update on Tele-Health Infrastructure

Keith Longie,
CIO, Phoenix Area

Bandwidth Utilization

LOCATION	Bandwidth	Peak % IN	Peak % OUT	Video Capable?
Phoenix Area Office	45,000	34%	35%	Yes
PIMC With Redundant Circuit	45,000	25%	18%	Yes
AZTEC Building	10,000	82%	21%	Yes
White River (DS3 on Order)	6,176	83%	60%	Yes
Hopi Health Care (Planning DS3)	4,632	92%	76%	Yes*
Parker Indian Hospital	4,632	77%	55%	Yes
San Carlos Hospital	3,088	90%	68%	Yes
Peach Springs Health Center	3,088	86%	34%	Yes
Ft. Yuma HC	3,088	62%	67%	Yes
Sparks OEH	3,088	61%	30%	Yes
Hu Hu Kam Hospital	3,088	55%	23%	Yes
Salt River (Planning upgrade)	3,088	41%	10%	Yes
Washoe	1,544	98%	17%	Yes
Elko (second T1 ordered)	1,544	97%	80%	Yes
Owyhee Hospital (Network renovation)	1,544	92%	69%	Yes
Pyramid Lake (Under Evaluation)	1,544	78%	69%	Yes*
Fort Duchesne (2nd T1 ordered)	1,544	76%	60%	Yes
Reno-Sparks Tribal HC	1,544	72%	97%	Yes
Bylas HC	1,544	70%	7%	Yes
Desert Vision	1,544	67%	35%	Yes

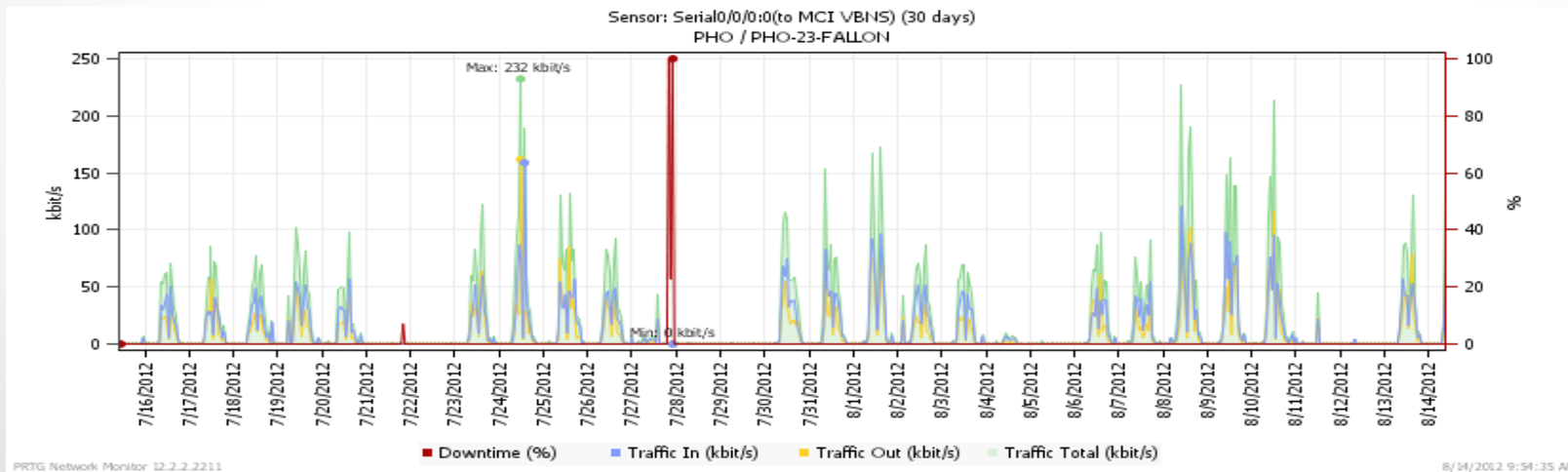
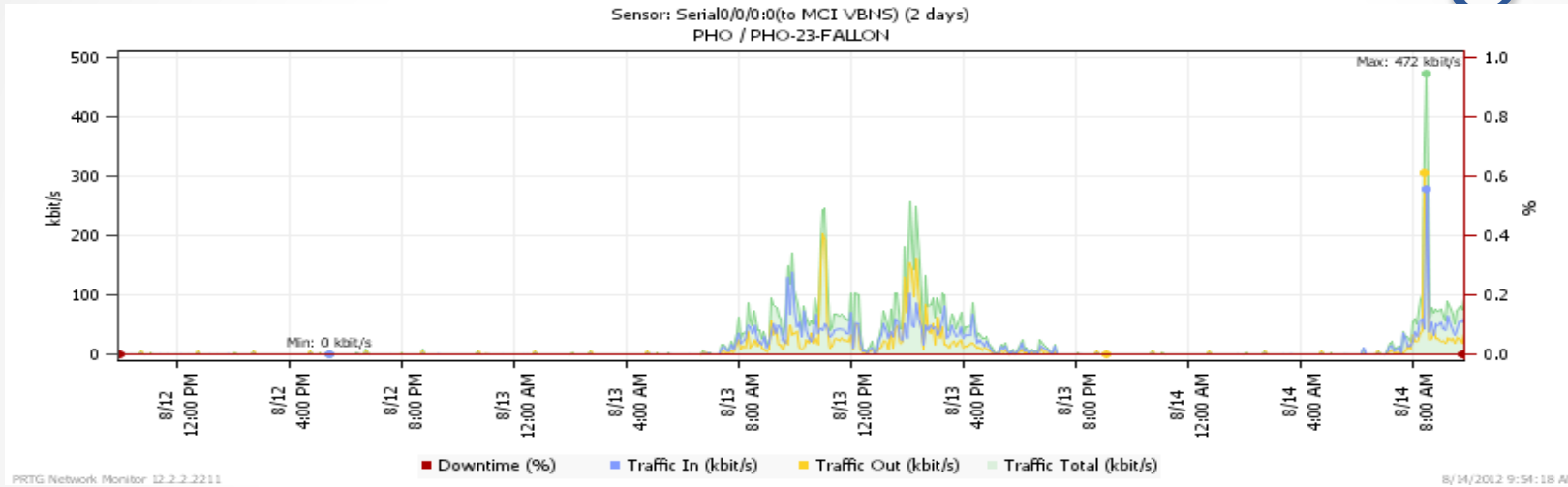


Bandwidth Utilization

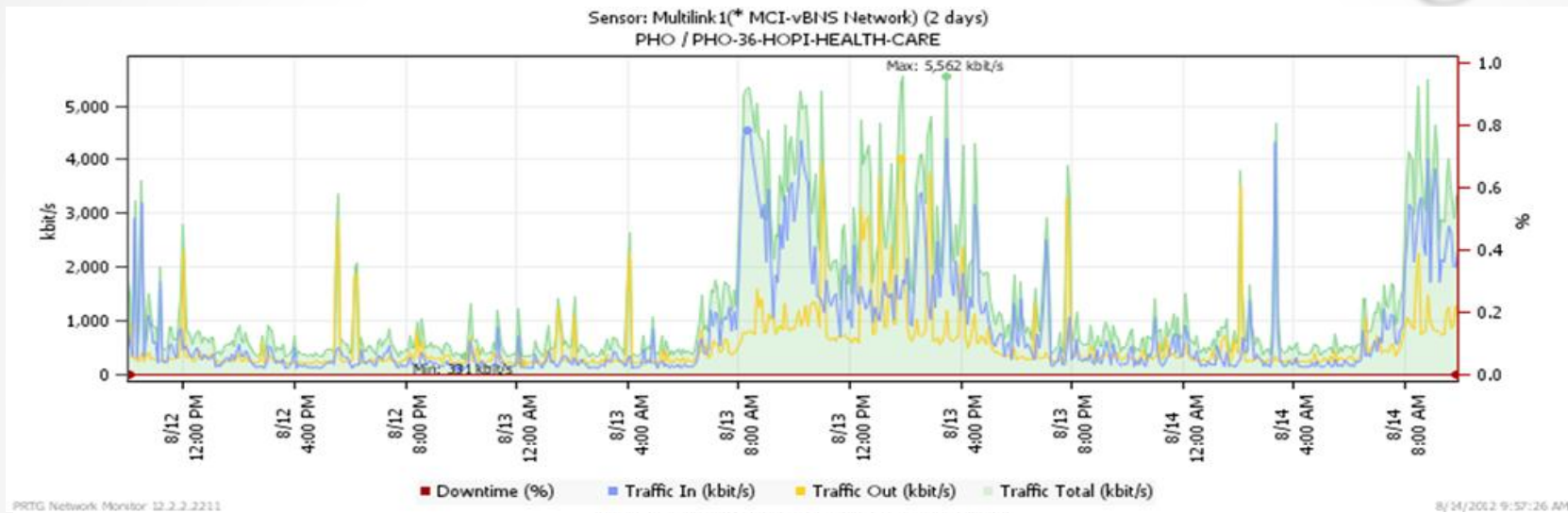
LOCATION	Bandwidth	Peak % IN	Peak % OUT	Video Capable?
Fort Mojave	1,544	64%	40%	Yes
Schurz	1,544	60%	6%	Yes
Moapa	1,544	58%	1%	Yes
Nevada Skies Youth RTC	1,544	52%	30%	Yes
Cibecue	1,544	47%	13%	Yes
Chemehuevi	1,544	45%	3%	Yes
Duckwater	1,544	43%	2%	Yes
Supai	1,544	43%	6%	Yes
Flagstaff	1,544	30%	18%	Yes
Newe Clinic - Ely	1,544	29%	1%	Yes
Wassaja Clinic (Ft. McDowell)	1,544	15%	4%	Yes
Native American CHC	1,544	9%	93%	Yes
Goshute	1,544	8%	1%	Yes
McDermitt	1,544	6%	1%	Yes
Fallon	1,544	5%	6%	Yes
Yavapai Apache	1,544	4%	2%	Yes
Nevada Urbans	1,544	2%	4%	Yes
Yerington	1,544	1%	1%	Yes
Las Vegas	1,544	1%	59%	Yes
IWIC (Salt Lake Urban)	1,544	0%	0%	Yes



Network Monitoring

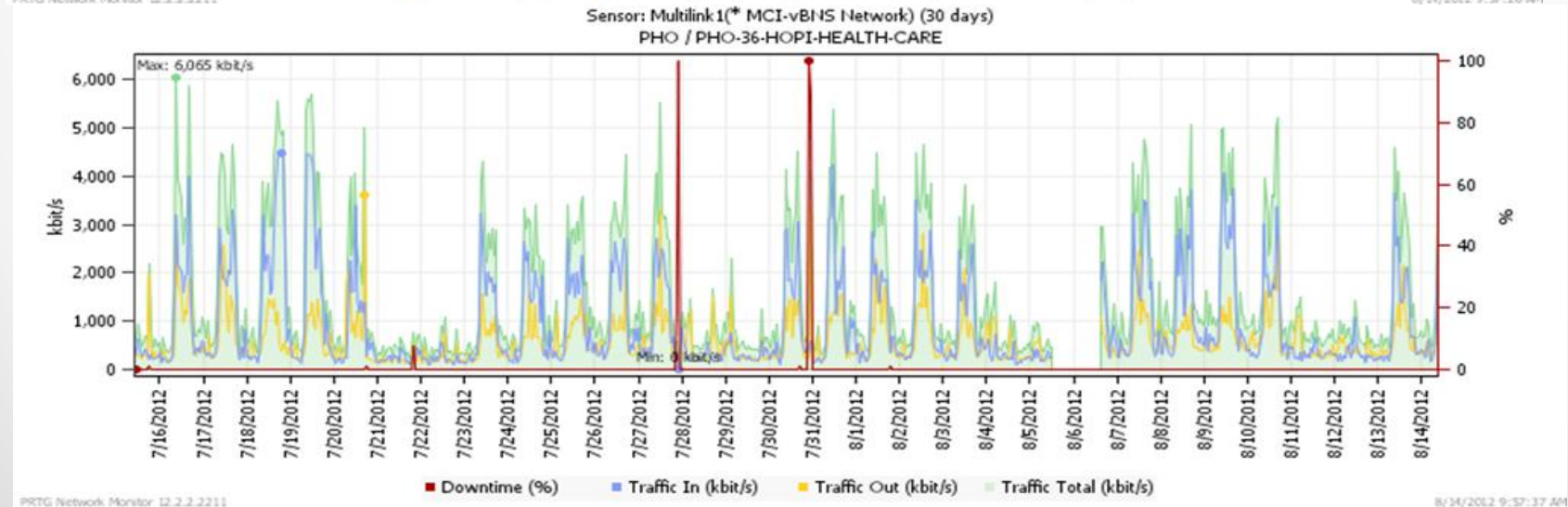


Network Monitoring



PRTG Network Monitor 12.2.2.2211

8/14/2012 9:57:26 AM



PRTG Network Monitor 12.2.2.2211

8/14/2012 9:57:37 AM

Current Video Equipment



Location	Video Equipment	Total Units
Moapa	AFCHAN* Cart	1
Yerington	unknown	1
Newe-Ely	1-Polycom FX, 1 New Polycom	2
Owyhee	1-ARRA and 1 from U of N	2
Duckwater	AFCHAN Cart + 1 Polycom	2
Schurz	2 Polycom	2
Elko	AFCHAN Cart + 2 Polycom	3
Washoe	Polycom	1
Fallon	Polycom	2
Goshute	AFCHAN Cart	1
McDermitt	In Transit	1
Nevada Urbans	No Video / No AFCHAN	0
Reno/Sparks Tribal Health	Polycom 7000	1
Nevada Skies Youth RTC	5 Polycoms (2 large and 3 desktop units) 1 Tandberg	6
Walker River Tribal Health	Polycom (ARRA) & AFHCAN	2
Yomba Tribal Administration	Polycom	1
Pyramid Lake	4000 & FX	2
Las Vegas Tribal	No Video / No AFCHAN	0
Sparks OEH	No Video / No AFCHAN	0
TOTAL		30

Vista Imaging Implementation

VistA Veteran's Information System and
Technology Architecture (RPMS)

DICOM Digital Imaging and Communications
in Medicine

PACS Picture Archiving and Communication
System

Vista Imaging terms

VistA Imaging Display /Capture

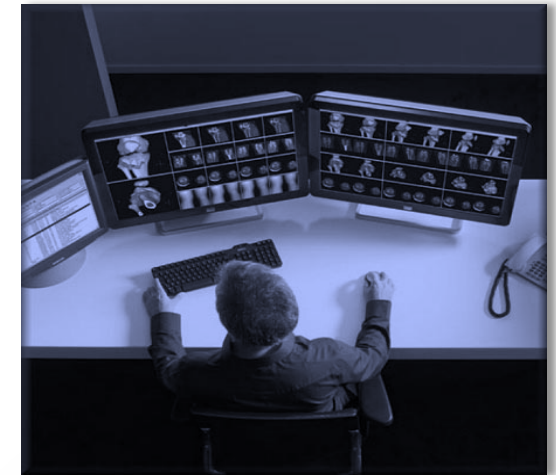
aka Clinical Workstations

- ❖ Runs parallel with EHR.
- ❖ Consult / Review Quality Imagery



VistARad

- ❖ FDA Controlled Medical Device
- ❖ Diagnostic Quality Imagery



Vista imaging terms

LTA/MTA/NTA

- ❖ Long Term Archive at Phoenix
 - ❖ Archive Appliance (AA) or Jukebox

Plasmon Archive Appliance

- 30GB Ultra Density Optical (UDO) Platters
- 238 Slots
- 4 UDO Drives
- 5 500 GB Hard Drives



Vista Imaging Display

The image displays the Vista Imaging Display interface, which is a multi-panel medical software application. The main window is titled "Vista Imaging Display" and shows a patient's profile, a menu bar (File, Options, View, Reports, Data, System Manage), and a toolbar. Below the patient information, it states "No Health Summary exists for this Demo Patient".

The interface is divided into several panels:

- Top Left:** Patient information and a small portrait photo.
- Top Right:** A large window showing a sagittal MRI scan of a brain. Below the scan is a yellow bar with the text "LAB 35 - 06/95 MRI (N256226)".
- Middle Left:** A grid of 31 small image thumbnails, each with a label and a date. The labels include "1 Patient photo", "2 Back of Patient with", "3 Back Closeup, Nucleof", "4 Gastrointestinal Pol", "5 Quids", and "6 Anatomical Drawing".
- Middle Right:** A window titled "Full Resolution View" showing a high-magnification pathology slide of tissue stained with hematoxylin and eosin (H&E). The text "LAB 92 - 12/81 Pathology Mitoses 100X" is visible. To the right of the slide is a vertical ECG trace.
- Bottom Left:** A window titled "24 of 32 Abstracts : Demo_Patient" showing a list of abstracts with corresponding image thumbnails. The abstracts are numbered 1 through 6, matching the thumbnails in the middle-left panel.
- Bottom Center:** A text window displaying medical history and admission/discharge information. The text includes:
- Admission/Discharge (see 5 of (continued))
08/94
City: GENERAL (ACUTE MEDICINE)
Diagn: GENERAL (ACUTE MEDICINE)
DXLS: CHEST PAIN NOS
CD DX: AORTOCORONARY BYPASS
DIAPHRAGMATIC HERNIA
OTHER PSYCHIASIS
NAUSEA AND VOMITING
08/93
City: GENERAL (ACUTE MEDICINE)
Diagn: GENERAL (ACUTE MEDICINE)
DXLS: CORONARY ATHEROSCLEROSIS

Vista Imaging Display

The screenshot displays the VistA Imaging Display software interface. The main window, titled "Radiology Viewer -- Demo Patient", shows a large chest X-ray. The interface includes several toolbars and panels:

- Top Left:** A small window showing a patient photo and the text "Patient: [Name Redacted]". Below it, it says "Demo of various type of Images" and "No Health Summary exists for this Demo Patient".
- Top Right:** A window titled "Image Viewer" showing a smaller image of a brain scan.
- Bottom Left:** A panel titled "24 of 32 Abs" containing a list of patient records:
 - 1 patient photo PATIENT ID 05 - 1211
 - 3 Back Closeup, Microf DEM 05 - 06114
 - 5 Cards LAB 94 - 02104
- Bottom Right:** A panel showing a purple-tinted image and an ECG waveform. The ECG is labeled "PERICARDIUM" and has a date "30 05 02 1 1994 08 08".
- Main Window:** The central area displays a large chest X-ray. The status bar at the bottom of this window reads "140 04 - 31/01 ChestXray, Ix10034042".

VistA Imaging Display

The screenshot displays the VistA Imaging Display software interface. The main window, titled "VistA Imaging EKG Display: MADTL,F", shows patient information and a list of tests. The patient's name is "MADTL,F" and the ID is "ID:008000000". The test list includes:

Test Ty...	Date/Time
1 Resting	08/13/1997 09:45:00
2 Resting	08/13/1997 09:45:00
3 Resting	07/30/1997 09:01:00
4 Resting	07/30/1997 09:01:00
5 Resting	07/29/1997 09:03:00
6 Resting	07/29/1997 09:03:00
7 Resting	07/27/1997 08:58:00
8 Resting	07/27/1997 08:58:00
9 Resting	11/22/1995 11:27:00
10 Resting	11/22/1995 11:27:00

The EKG display shows multiple leads (I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6) on a pink grid. The date and time "08/13/1997 09:45:00" are displayed in blue. Other windows show a patient photo, a brain MRI scan, and various medical images including a chest X-ray and an anatomical drawing.



Phoenix Area IHS

Telemedicine: Technology for Delivery of Care

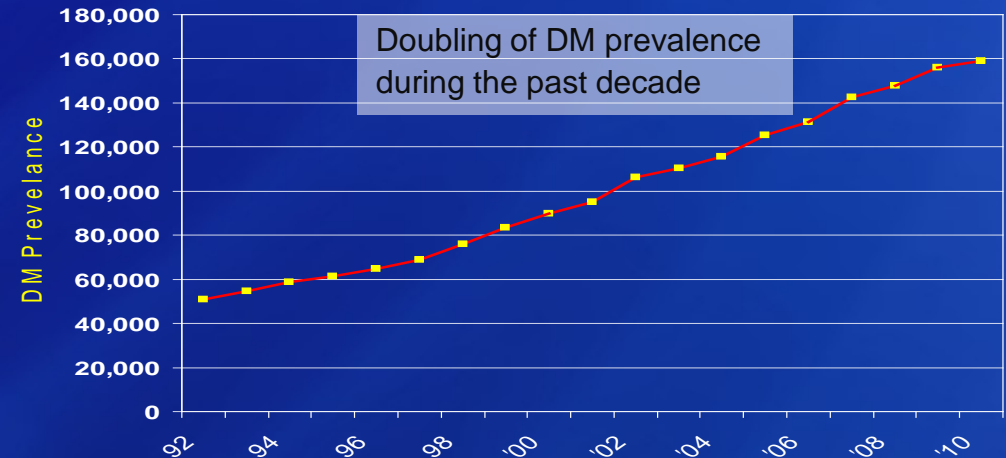
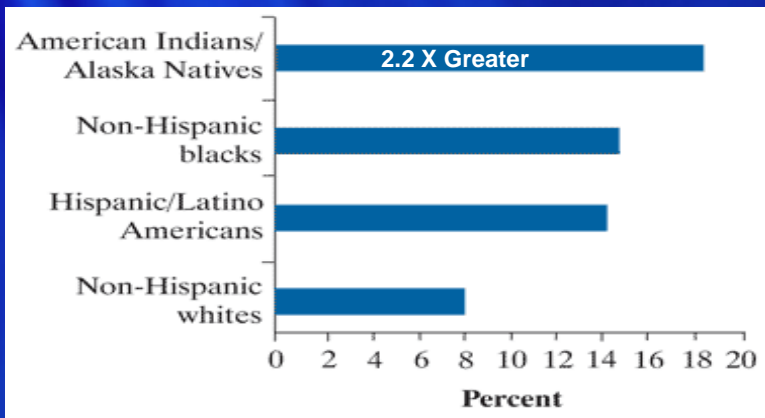
IHS-JVN Teleophthalmology Program

15 August 2012

Mark B. Horton, OD, MD
Director, IHS/JVN Teleophthalmology Program

Diabetes Mellitus in Indian Country

Rapidly Increasing Prevalence



Epidemic nature of DM paralleled by DR

89% increase in DR for individuals >40 y/o since 2000

“Vision Problems in the US”, NEI 2012

Ocular Complications of DM

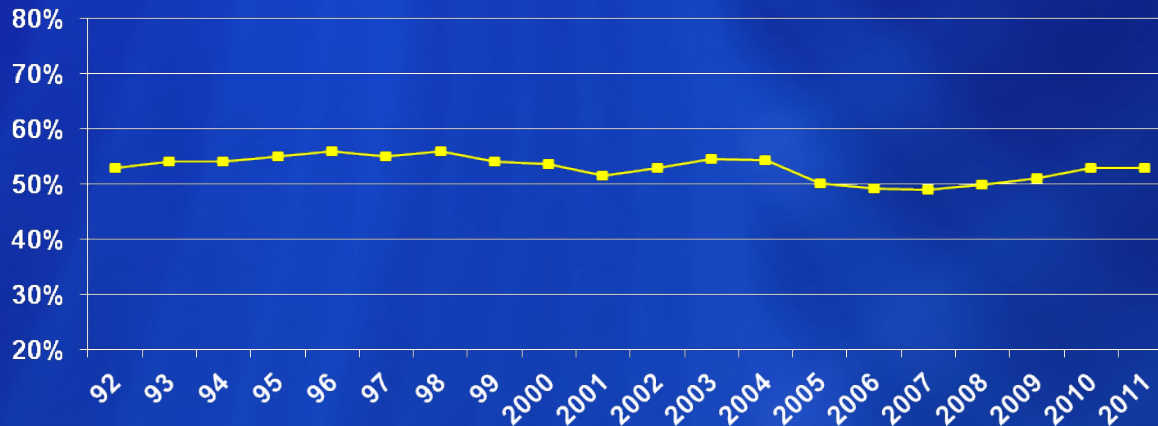
Ocular Tissue	Conditions
Lids	Xanthelasma, Blepharitis
Orbit	Cellulitis
Cornea	Keratitis, Epithelial erosions, Keratitis
Iris	Poor dilation, Rubeosis
Lens	Transient refraction changes Cataract (and ↓surgical outcomes)
Retina	Retinopathy/Maculopathy Retinal vein occlusions Retinal artery occlusions Ischemic syndromes
Optic Nerve	Papillopathy, Glaucoma, Anterior Ischemic Optic Neuropathy
Cranial Nerves	3 rd , 4 th , 5 th , 7 th CN palsies
CNS	CVA associated vision loss

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Diabetic Retinopathy

- Virtually all diabetics eventually have DR
- Diabetic Retinopathy is the leading cause of new blindness in adults
- Blindness due to diabetes can be eliminated by timely Dx and Tx



Half of AI/AN population with DM
do not get timely Dx and Tx

Diabetic Retinopathy

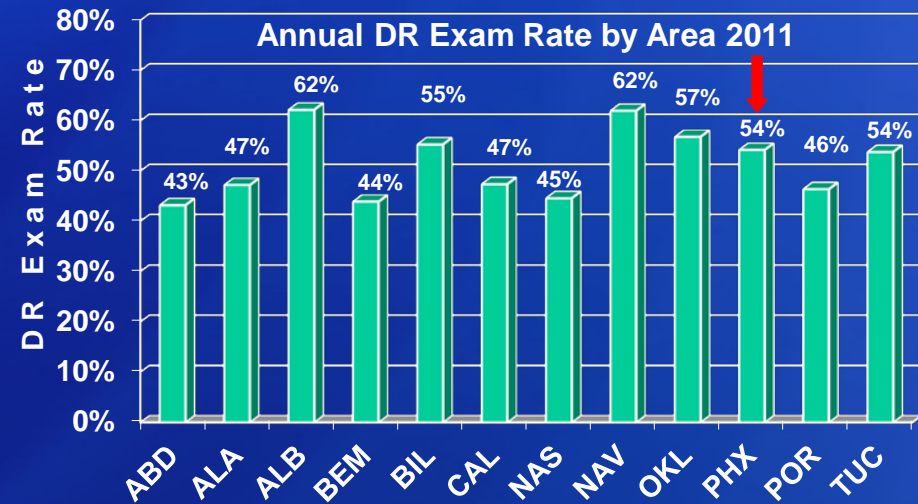
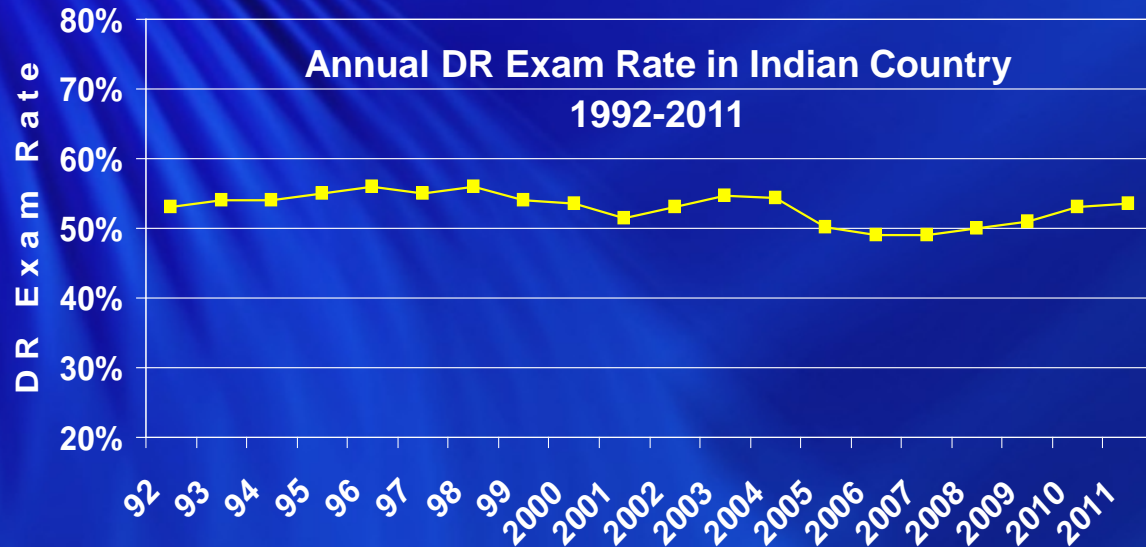
Standard of Care

- Standard of Care -
annual DR exam

ADA
 AAO
 AOA
 VHA*
 DoD
 HEDIS

DR severity	CSME	f/u (mths)
Minimal NPDR	No	12
Mild-Moderate NPDR	No	6-12
	Yes	2-4
Severe NPDR	No	2-4
	Yes	2-4
Low Risk PDR	No	2-4
	Yes	2-4
High Risk PDR	No	3-4
	Yes	3-4

Half of AI/AN population with DM do not get timely Dx and Tx



**“Every system is perfectly designed
to achieve the results it gets.”**

**Donald Berwick
Director CMS
CEO, IHI**

Telemedicine-DR: A better tool to address this universal public health problem

- **VHA**
 - 1.3 million veterans with DM (25%)
 - 400 Tmed-DR deployments / 500,000 annual exams
- **UK**
 - 2.2 million with DM
 - 1.8 million annual tmed DR exams

DR Surveillance Methods

- **GPRA element #6- annual DR exam**
- **Qualifying examinations**
 - Dilated Exam by optometrist or ophthalmologist
 - 7 standard field stereoscopic 35mm slides using ETDRS methodology
 - Photographic method validated to EDTRS

DR Surveillance Reporting

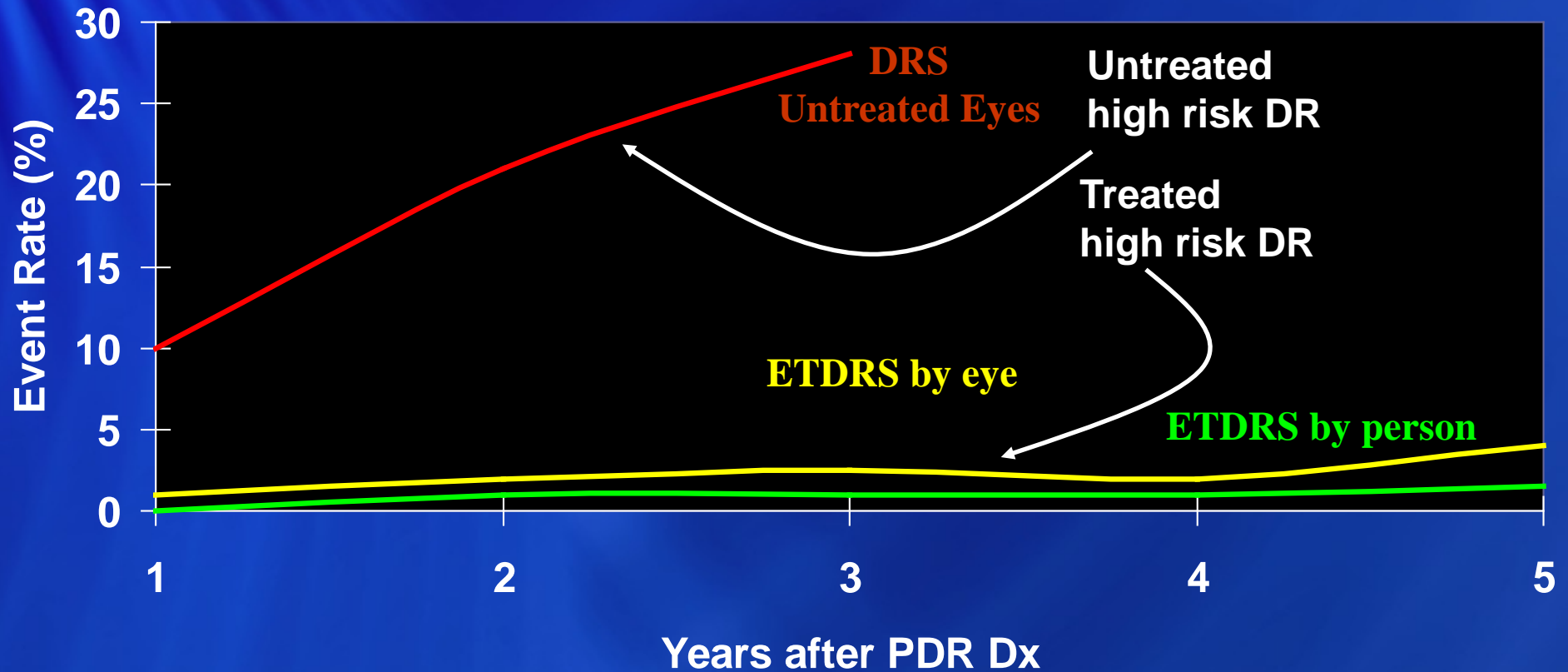
GPRA Performance Measure

Performance Measure	2011 Target	2012 Target	2013 Target	Headquarters Lead
TREATMENT MEASURES				
Diabetes Group				
6. Diabetic Retinopathy: Address the proportion of patients with diagnosed diabetes who receive an annual diabetic retinal examination. [outcome]	During GY 2011, maintain the proportion of patients with diagnosed diabetes at all sites who receive an annual retinal examination of 50.1% at all sites.	During GY 2012, maintain the proportion of patients with diagnosed diabetes at all sites who receive an annual retinal examination of 54.8% at all sites.	During GY 2013, maintain the proportion of patients with diagnosed diabetes at all sites who receive an annual retinal examination of 55.8% at all sites.	Mark Horton

DR Surveillance Performance

- IHS HQ requirement, 16 May 2012
 - All agency hospitals shall have IHS-JVN by end of FY2013
 - All agency facilities with DM prevalence >500 shall have IHS-JVN by end of FY2014
 - All agency facilities with IHS-JVN must meet or exceed the GPRA goal AND \geq 125% of pre-deployment rate
 - All agency facilities will report their JVN performance in bi-monthly Accomplishment Meetings

Visual Acuity Less than 20/800 Proliferative Diabetic Retinopathy



Diabetic Retinopathy

Economics of Dx and Tx

Javitt, 1989	Treatment of DR in IDDM	Cost of screening and PRP per person-year of sight saved = \$966
Javitt, 1990	Efficiency of screening strategies DR in IDDM	Dx and Tx of DR saves from \$62-\$109 million/yr and 71,000-85,000 sight years
Dasbach, 1991	DX and Tx strategies for DR	Costs for screening are recovered by the avoided costs of blindness
Javitt, 1991	Efficiency of current screening conditions vs higher levels of compliance	Added savings of \$9500 occur with each new person screened.
Javitt, 1994	Savings to the federal budget from Dx and Tx of DR	Savings of \$248 M to the federal budget. If all patients are screened; could save up to \$472 M and 94,304 person-years of sight
Javitt, 1996	Cost-effectiveness of Dx and Tx of DR	710,800 person-years of sight vs 413,200 person-years of sight saved by the current level of screening. \$1,757 per person-year of sight saved; \$3190 per QALY

Diabetic Retinopathy

Failure to meet Standard of Care

- **Impact**

- **Public health**

- **Social**

- **Cultural**

- **Economic**

- **Patient**

- **Federal funding**

- **>\$474M/yr federal health care funding could be saved if all diabetics were introduced to established standards of care for DR surveillance and treatment**

IHS-JVN Program Genesis

Legislative Language

FY99

... fund cooperative efforts with the Joslin Diabetes Center in Boston to non-invasively screen for diabetic retinopathy in AI/AN Communities.

FY99 - \$250,000

FY00-01- \$1,000,000

FY02-12- \$1,500,000

Joslin Vision Network (JVN)

- **Quick and painless**
 - **Low level illumination**
 - **No pupil dilation**
- **Non-invasive**
- **Interleaved with other patient encounter events**
- **Validated**

Joslin Vision Network (JVN)

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Joslin Vision Network (JVN)

- Quick and painless
- **High Patient Satisfaction**
 - Low level illumination
 - No pupil dilation
- **Non-invasive**
- **High Provider Satisfaction**
- Interleaved with other patient encounter events
- **Meets Standard of Care**

JVN Physical Components

JVN Image Acquisition Station



- Retinal Image Acquisition by certified imager in primary care clinic
- Demographics harvested from RPMS
- Hx supplemented
- Patient Education
- Data transmission
 - Images
 - Health Summary

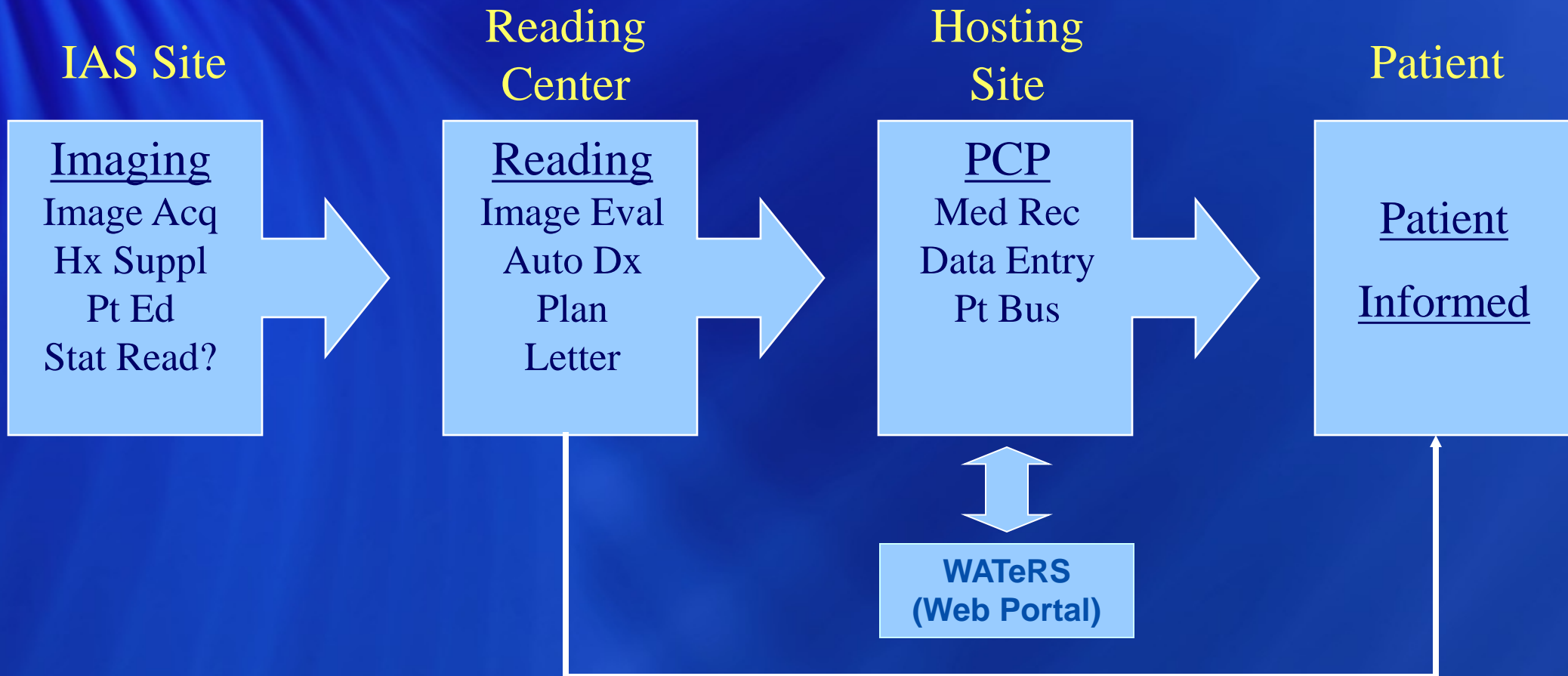
JVN Physical Components

JVN Diagnostic Workstation

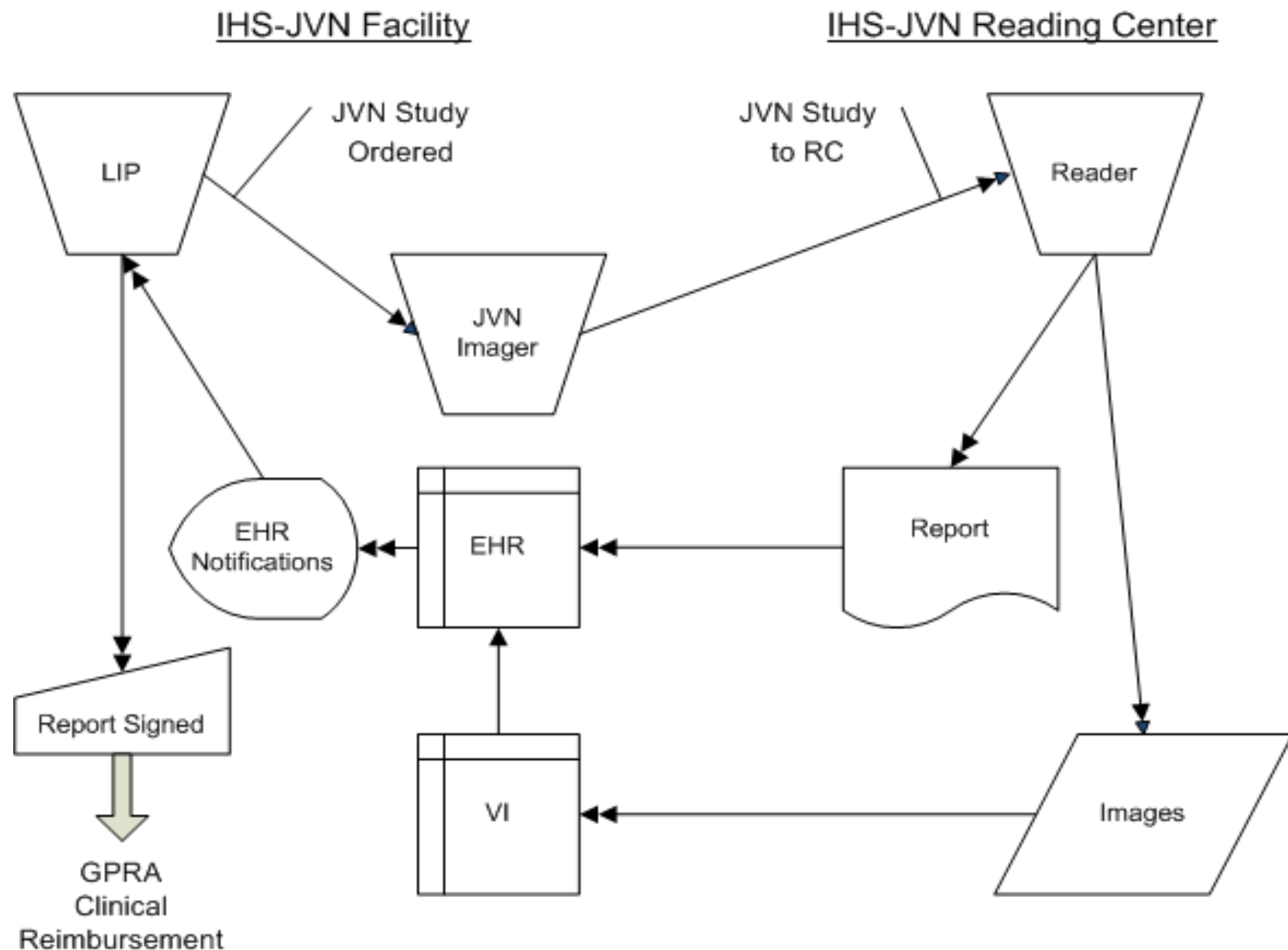
- Image analysis (post imaging processing)
- Automated diagnosis with reader validation
- Automated documentation



IHS/JVN: Workflow



INS-JVN Data Flow Development



Teleretinal Surveillance Report
IHS/JVN National Reading Center
 IHS/JVN National Reading Center
 4212 N. 16th St, Phoenix, AZ 85016

Patient:	[REDACTED]	Referring Physician:	
Medical Record #:	[REDACTED]	Physician Contact Info:	
Gender:	Male		
Date of Birth:	10/04/1949	Imaging Date:	09/01/2009
Age:	59 years	Imaging Location:	King Cove Clinic
Imager Name:	CARR,TARA	Date, Time Received:	09/08/2009 10:40 AM ET

Patient's Medical Risk Factors for Diabetic Retinopathy (DR)
Information Provided by Referring Practice

Duration of Diabetes: 10 years	Last Eye Exam: 10/2008
Diagnoses:	Lab Studies:
Hypertension: Actual	Abdominal Obesity: Actual
Anemia: Actual	
	Total Cholesterol: 163
	LDL: 52
	HDL: 102
	HbA1c: 5.3
	Blood Pressure: 135/75

Imaging Results


	RIGHT EYE (OD)	LEFT EYE (OS)
Level of Nonproliferative DR:	Moderate	Moderate
Level of Proliferative DR:	No Evidence	No Evidence
Level of Macular Edema:	Evidence of s/p focal or grid laser treatment	Evidence of s/p focal or grid laser treatment
Additional Findings:	Iris nevus Cataract	Iris nevus Cataract

Comments: light focal laser scarring in mac OD, and sectoral grid infer-temp to mac OS

Treatment Plan Guidance

Anemia: Anemia increases the risk of progression of diabetic retinopathy and retinal hemorrhage. Optimization of this patient's anemia is recommended as medically appropriate to this patient's particular circumstances.

Hypertension: Elevated blood pressure (>=130/80) has been shown to increase the risk of development and progression of diabetic retinopathy as well as cotton wool spot formation. Optimization of BP control is recommended as medically appropriate to this patient's particular circumstances.



early cataracts ou- possible basis for pt's symptoms of blurry vision.
s/p focal/grid laser in/near mac ou. Maculae appear dry OU.

This patient shows moderate NPDR in the presence of significant risk factors for faster than normal progression.
 Refer to Eye Clinic: Based on the above findings, we recommend follow up with an optometrist/ophthalmologist in 6 months.

Evidence Basis for the JVN

- Diagnostic validity
 - Diabetic pathology
 - Non-diabetic pathology
- Outcome Analysis
- Cost Effectiveness

JVN Validation Studies

ETDRS Validation – Gold Standard

Sven Bursell, et al. Stereo non-mydriatic digital-video color retinal imaging compared to ETDRS 7-field 35-mm stereo color photos for determining level of diabetic retinopathy. *Ophthalmology*, 2001;108(3):572-585.

Clinical Validation – Community Standard

Anthony Cavallerano, et al. Use of JVN digital video non-mydriatic retinal imaging to assess diabetic retinopathy in a diabetic outpatient intensive treatment program. *Retina*, 2003; 23(2), 215-23.

JVN Validation Studies

Non-diabetic Pathology

Sing-Pey Chow, et al. Comparison of nonmydriatic digital retinal imaging versus dilated ophthalmic examination for nondiabetic eye disease in persons with diabetes. *Ophthalmology*, 2006;108(3):833-840.

N= 560 91%-100% Agreement (Avg 95.5%)	
Retinal Emboli (3)	Retinitis Pigmentosa (1)
Asteroid Hyalosis (1)	CR Atrophy/Scar (6)
Epiretinal Membrane (11)	Choroidal Lesion (18)
HTN/Renal/Systemic Factor (15)	Glaucoma Suspect (18)
Cataract (100)	AMD/Macular Drusen (52)

Non-Diabetic Retinopathy





10-20-03

Patient # 21932
Benewah Medical Center
RE:

Thank you for participating in the JVN Retinal Examination Program here at the Benewah Medical Center. The Joslin Vision Network is a service developed to identify the early signs of diabetic retinopathy, a leading cause of blindness among diabetics.

Based on the images taken on 10-17-03, our findings are as follows:

RIGHT EYE:

No Diabetic Retinopathy

Other findings: Large flame shaped hemorrhage vs low order branch retinal artery occlusion. Clinical correlation is required for hypertension and vascular work up. If BRAO, it is probably secondary to HTN, but must rule out embolic and thrombic etiologies with carotid flow studies, 2D echo of the heart, and blood work including CBC, ESR, ANA, and FTA-abs.

LEFT EYE:

No Diabetic Retinopathy

Other findings: Two flame shaped hemorrhages inferior to ONH, no view of macula

Based on these findings, we recommend a follow-up examination with a primary care doctor immediately. If you have any questions regarding your retinal images, feel free to contact us by phone or fax, Monday – Friday, 9:00am to 4:30pm.

Current medical treatment should strive to maintain normal serum cholesterol levels, to treat any hypertension or renal disease, and to *maintain as tight glycemic control as safely possible in order to delay the onset of any retinopathy and to slow the progression of diabetic retinopathy once it develops.*

IHS/JVN National Reading Center
Phoenix Indian Medical Center
Phone: 602-263-1504
Fax: 602-263-1635

JVN Validation Studies

- **ETDRS- gold standard**
- **Clinical- community standard**
- **Non-diabetic pathology**

The use of the JVN system and imaging device can produce a determination of clinical diabetic retinopathy that is comparable with ETDRS photographs, thereby satisfying the standard of care for DR surveillance.

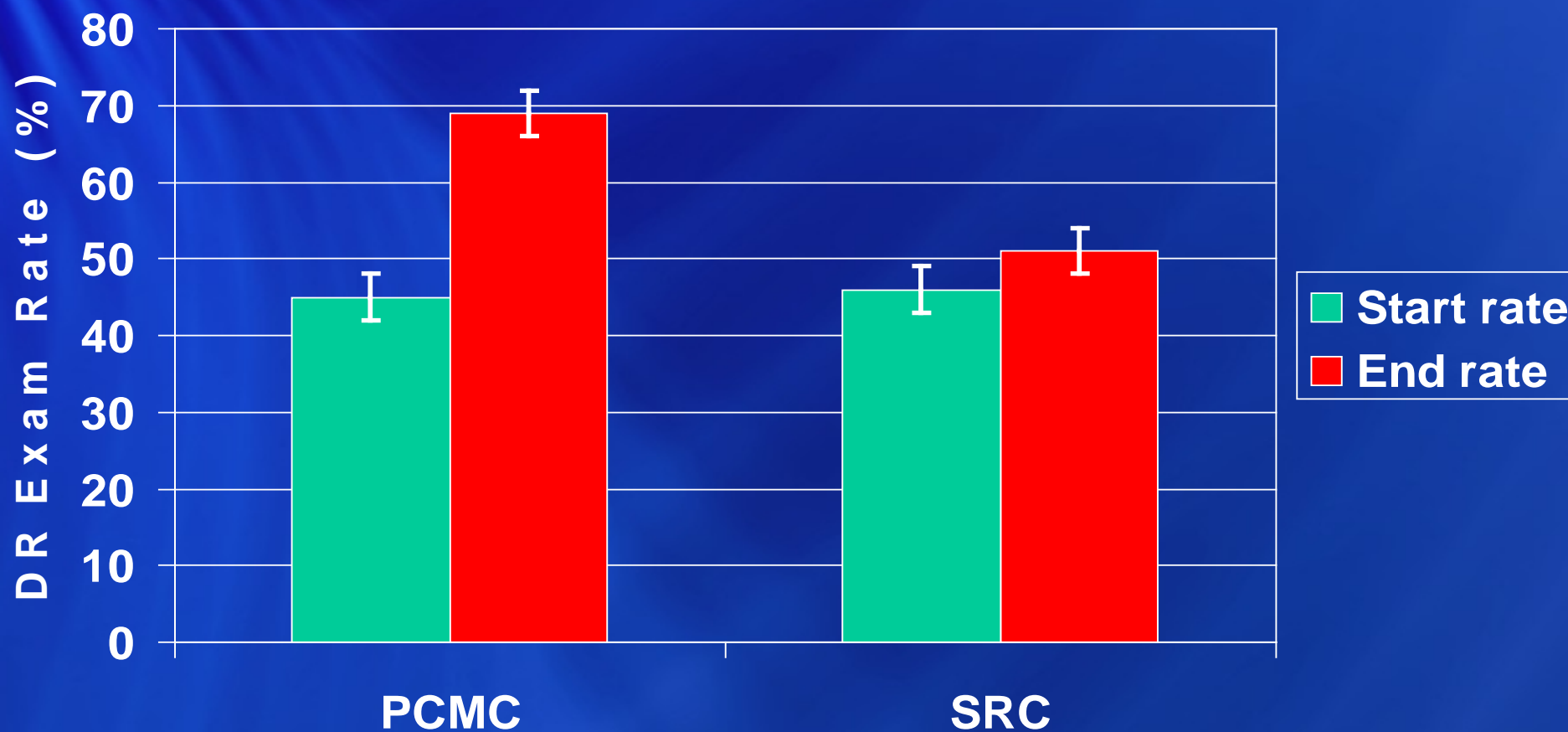
The use of the JVN system and imaging device can produce a determination of non-diabetic pathology residing within the fields captured.

Evaluation of the Effect of Implementing the Joslin Vision Network in an IHS Clinical Setting

Outcome:

**Can JVN increase DR examination
rate in a primary care setting?**

DR exam rate among people with diabetes at two clinics at the start and end of evaluation period



Diabetic Retinopathy

IHS/JVN Outcome Analysis

Year	1999	2000	2001	2002	2003
Population	52,991	55,566	58,233	59,963	61,871
# DM pts seen	2,910	3,183	3,581	3,829	4,068
% with retinal exam	50%	55%	70%	68%	75%
# with retinal exam	1,455	1,751	2,507	2,604	3,051
# with JVN images	0	183	1072	1272	1605
Laser Tx rate	1.96%	1.82%	1.87%	2.66%	2.95%

1999 – Baseline Year (pre-deployment)

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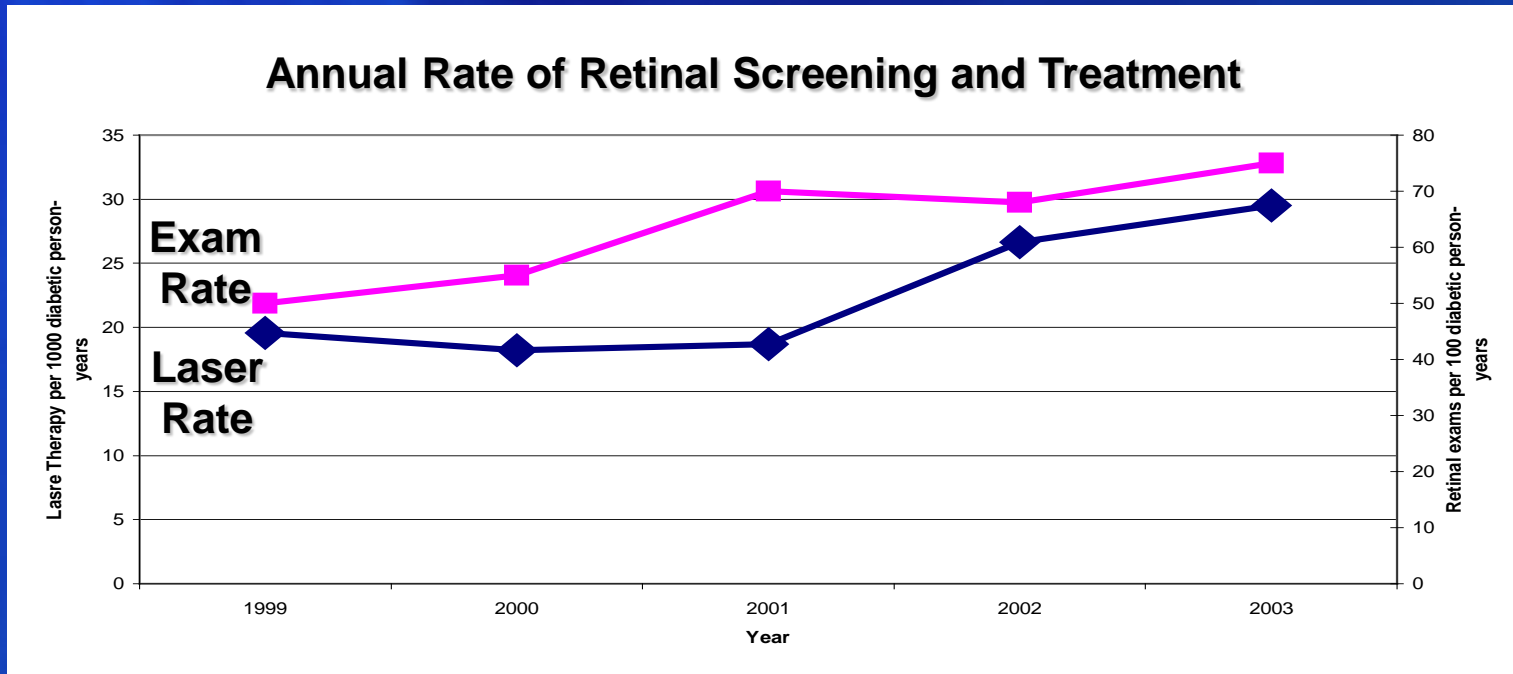
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# DM pts seen	2,910	3,183	3,581	3,829	4,068
% with retinal exam	50%	55%	70%	68%	75%
# with retinal exam	1,455	1,751	2,507	2,604	3,051
# with JVN images	0	183	1072	1272	1605
Laser Tx rate	1.96%	1.82%	1.87%	2.66%	2.95%

1999 – Baseline Year (pre-deployment)

Outcome Linked to Intervention (prevention of vision loss)

- **Diabetes Care- Feb 2005 (28:318-322)**

JVN resulted in a 50% increase in DR surveillance and 51% increase in laser treatment for DR (2000-2003)



Diabetic Retinopathy

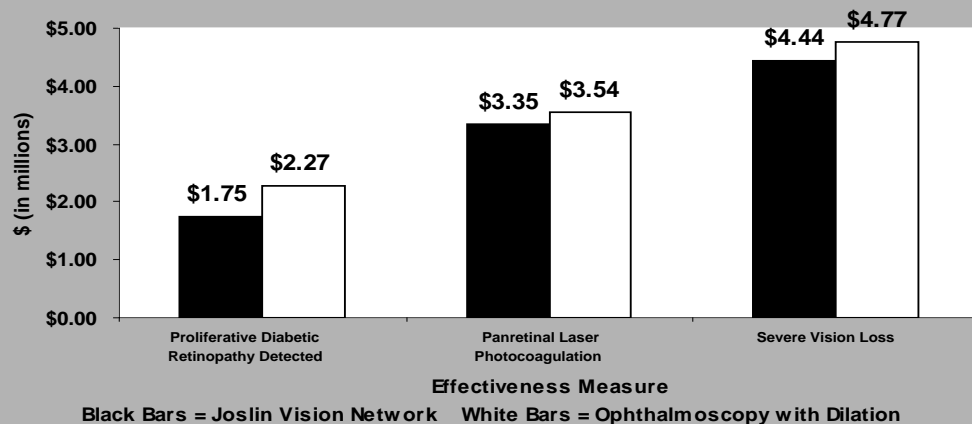
Cost Effectiveness

Whited JD, et al. A Modeled Economic Analysis of the Joslin Vision Network as used by Three Federal Healthcare Agencies for Detecting Proliferative Diabetic Retinopathy. *Telemedicine Journal and e-Health*

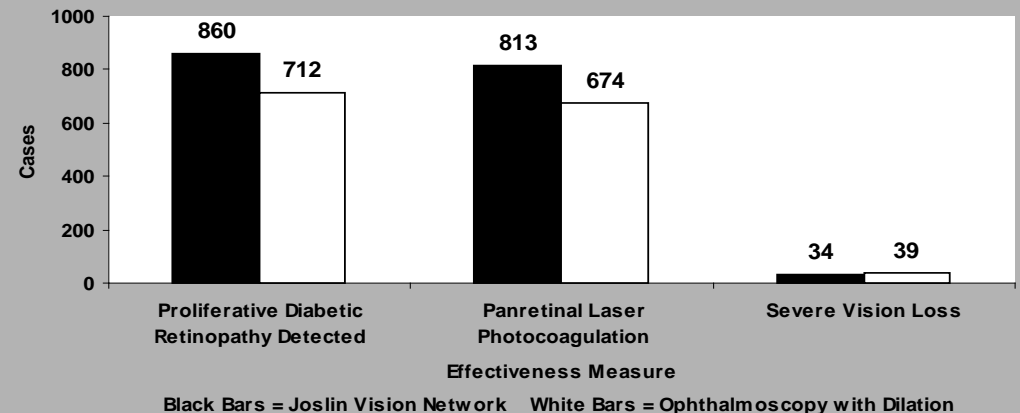
IHS/JVN is both less costly and more effective for:

- Detecting DR
- Identifying IHS patients that require laser tx
- Preventing severe vision loss

Total Costs
Indian Health Service



Effectiveness
Indian Health Service



Reimbursement Opportunities

Possible Revenue / 100 DM patients (AHCCCS-Medicaid)

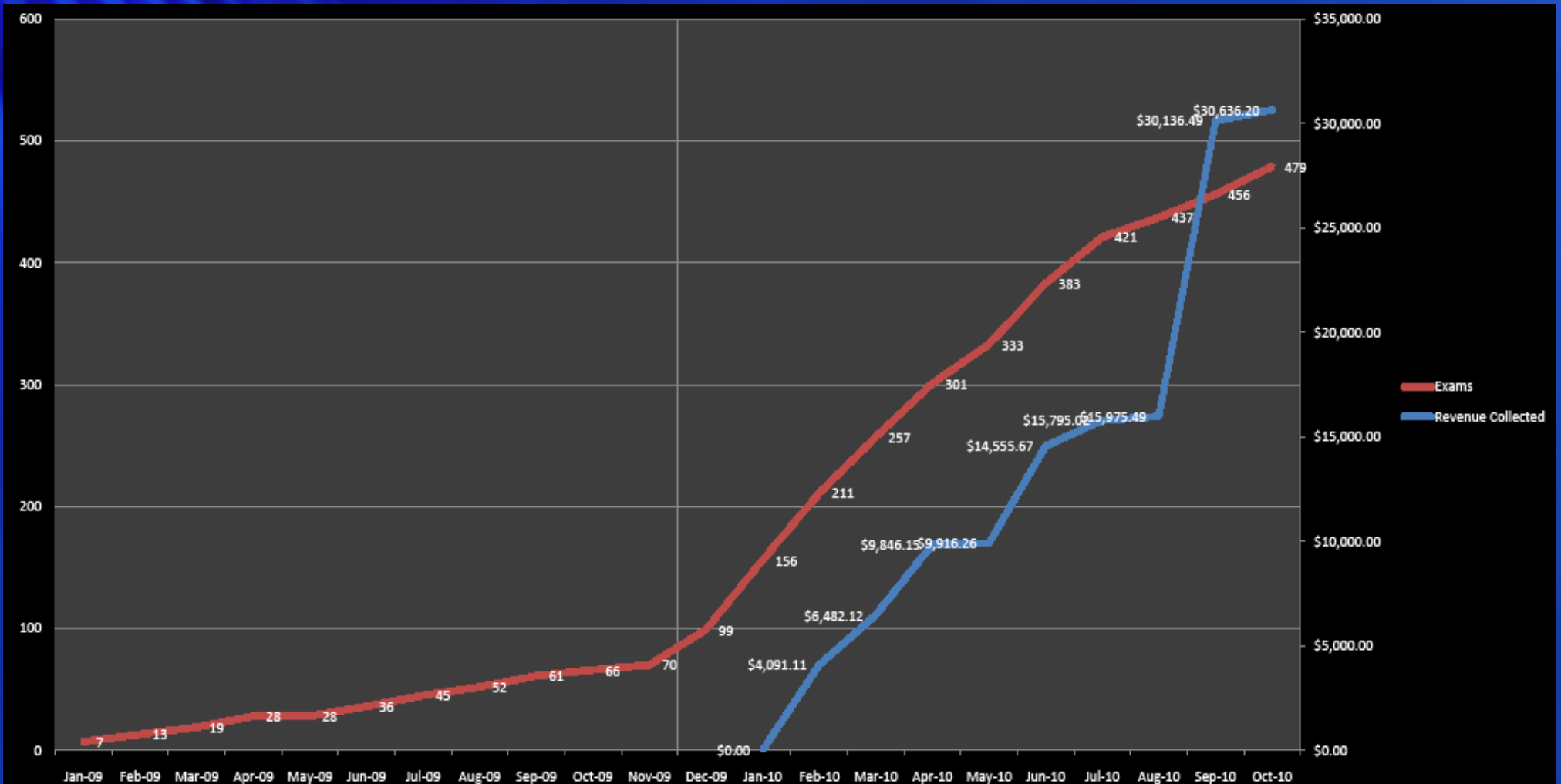
		Annual Reimbursement †					
Reimbursement rate		FY 2012		FY 2013		FY 2014	
Imaging Rate ††	AHCCCS/MA Eligibility Rate	30%	40%	30%	40%	30%	40%
		75%	\$2,168	\$2,890	\$2,493	\$3,324	\$2,834
100%		\$4,335	\$5,780	\$4,769	\$6,358	\$5,224	\$6,965
100% JVN		\$8,670	\$11,560	\$9,104	\$12,138	\$9,559	\$12,745

† Three year analysis beginning with 2012 epidemiology values for two AHCCCS eligibility prevalence rates, and assuming 5%/yr growth in DM prevalence

†† Imaging rates are considered for aggregate rates of 75% and 100% (live exams at the existing rate adjusted for annual DM prevalence increases + JVN imaging) and also a scenario wherein there is 100% JVN imaging of the population with DM

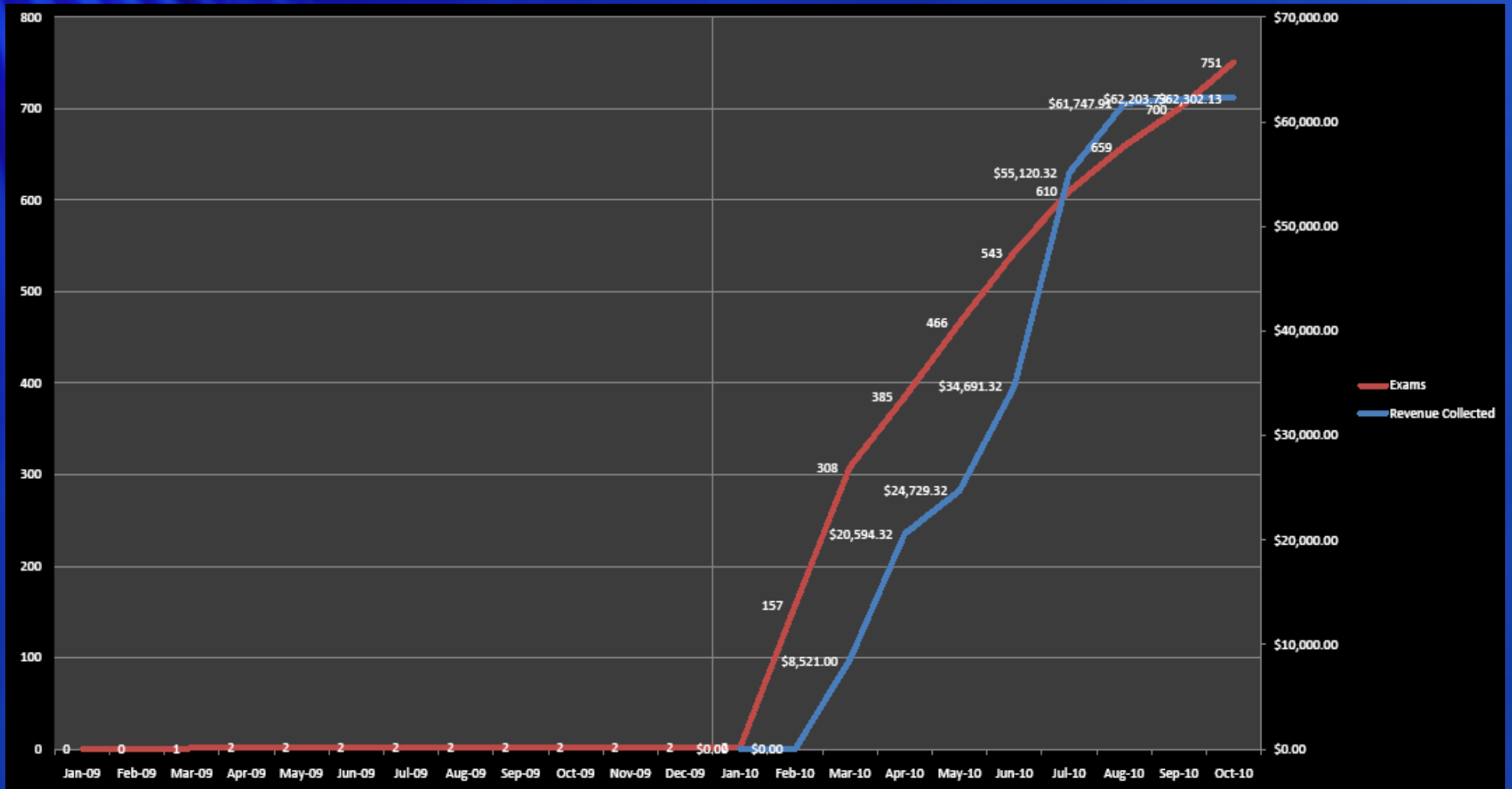
DR Surveillance

PAIHS SU Revenue Collected CY 2009-10
DM prevalence- 575



DR Surveillance

PAIHS SU Revenue Collected CY 2009-10
DM prevalence- 1,100



Cost Avoidance Opportunities

Cataract and Vitrectomy Surgery

- **Laser Tx (PRP)- ~\$1,000**
- **Vitrectomy- ~\$9,000**
 - Uncomplicated
 - Single procedure
 - Range- \$9-20K
 - Result- variable but rarely 20/20 visual result
 - Cataracts usually occur downstream
- **Cataract surgery ~\$4,000**

Cost Avoidance Opportunities

Cataract and Vitrectomy Surgery

Simple cost avoidance calculations for Dx and Tx of DR (100 DM Pts)

# patients with DM	100	Procedure	Cost
DR Exam Rate	50.0%	PRP	\$1,000
High risk DR detected	2	PPV	\$9,000
High risk DR un-detected	2	Cat	\$4,000

Prev High Risk DR= 4.5% Cost: Laser Tx= \$1,000; PPV= \$9,000 (no reops)

Simple Direct Costs Excess to Examinations

DR Exam Rate	0%	43%	75%	100%
Laser tx and/or IVT	\$0.00	\$1,912.50	\$3,375.00	\$4,500.00
PPV (vitrectomy)	\$40,500.00	\$23,287.50	\$10,125.00	\$0.00
Total	\$40,500.00	\$25,200.00	\$13,500.00	\$4,500.00
PPV cataracts	\$18,000.00	\$10,350.00	\$4,500.00	\$0.00
TOTAL	\$58,500.00	\$35,550.00	\$18,000.00	\$4,500.00

IHS-JVN Program

Using Tmed Innovation to Achieve a Public Health Outcome with a sustainable Business Plan

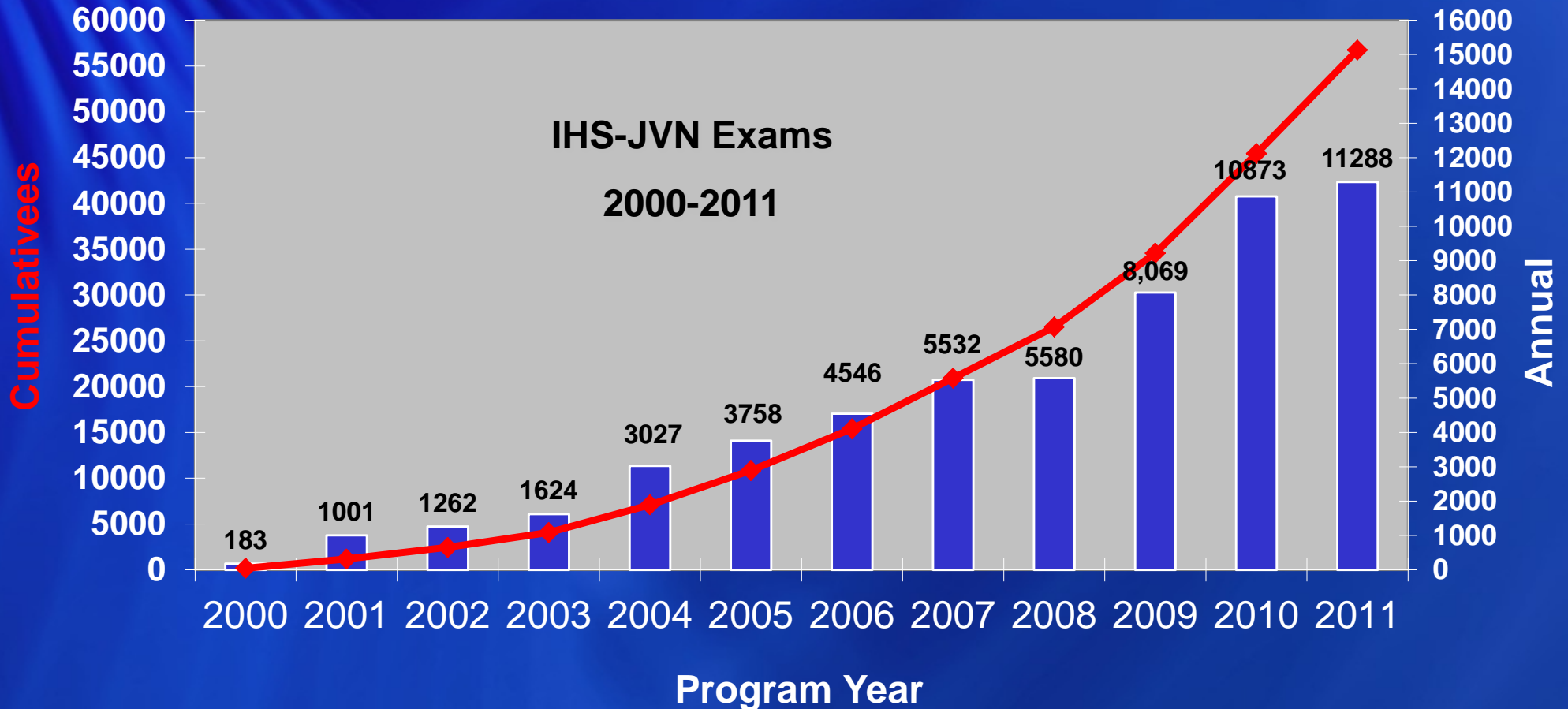
- **Business Model**
 - Centrally funded
 - Reimbursable with sustainable business model
 - Cost avoidance realized at the hosting site, ongoing

IHS-JVN Program

Using Tmed Innovation to Achieve a Public Health Outcome with a sustainable Business Plan

- **Public Health Model**
 - Reduced vision loss
 - Improved management of co-morbidities
 - Optimized tasking of existing eye care services to increase scope and operational efficiencies

IHS/JVN Experience



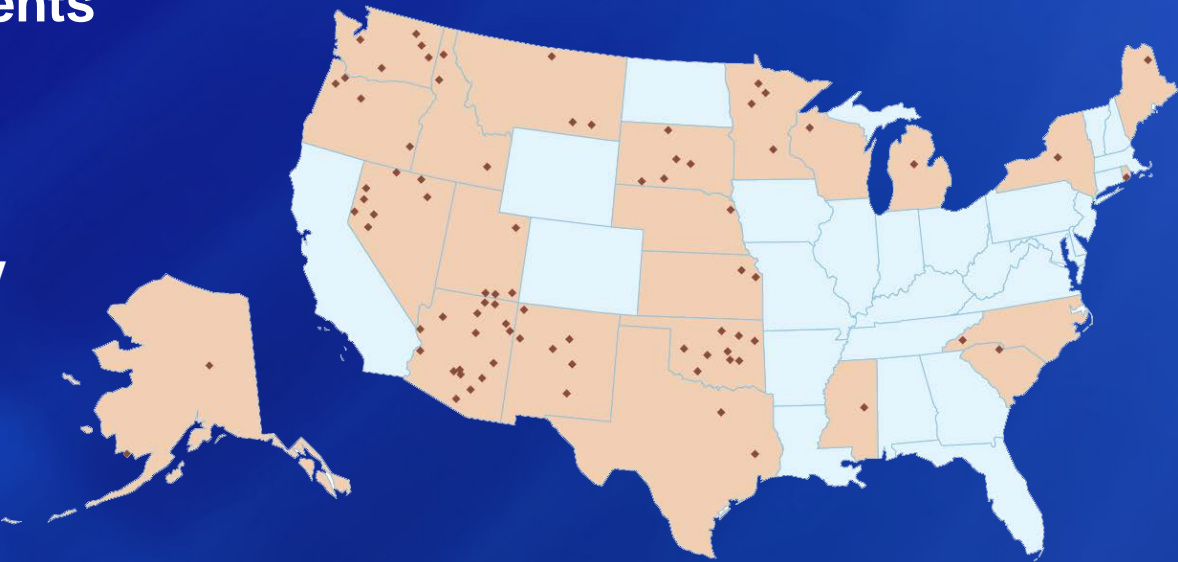
Diabetic Retinopathy Surveillance

IHS-JVN Teleophthalmology Program

83 physical/86 logical sites in 24 States

Phoenix and Tucson Area Deployments

- Phoenix, AZ
- Sacaton, AZ
- Polacca, AZ
- San Carlos, AZ
- Salt River, AZ
- Ft. Yuma, AZ
- Whiteriver, AZ
- Sells, AZ
- San Xavier, AZ
- Tucson, AZ
- San Xavier, AZ
- Ft. Mojave, AZ
- U & O, UT
- Elko, NV
 - Goshute, NV
 - Ely, NV
 - Duckwater, NV
- Reno Sparks, NV
- Schurz, NV
- Washoe, NV
- McDermitt, NV
- Owyhee, NV
- Pyramid Lake, NV
- Fallon, NV



IHS-JVN Program

Phoenix Area Emphasis

- **Deployments**
 - Parker Indian Hospital
- **Operations**
 - Increase JVN exams and reimbursement
 - Increase operational efficiencies
 - Improve data flow and image display

Pivotal Issues for Success

- **Imaging station must be in/near primary care center where patients with DM receive care**
- **DM primary care clinical team must have a sense of ownership of the program**
- **Imager must be accountable for recruitment and imaging rate**
- **Process for referral of threshold DR**
- **Site must seek reimbursement**

IHS-JVN Program

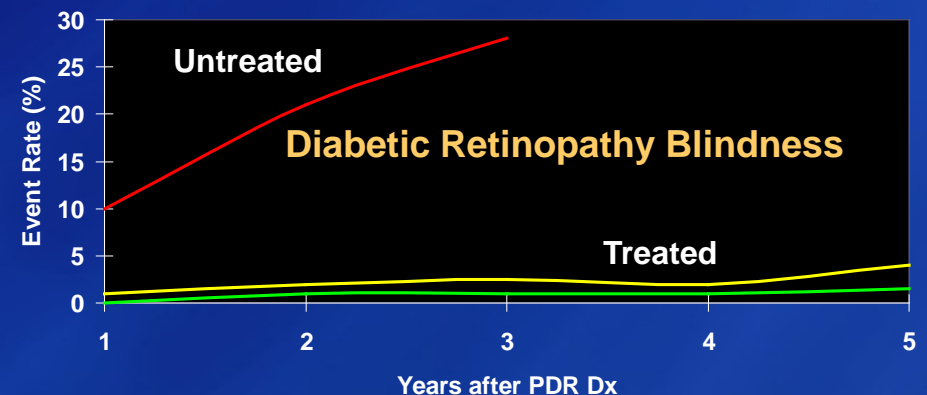
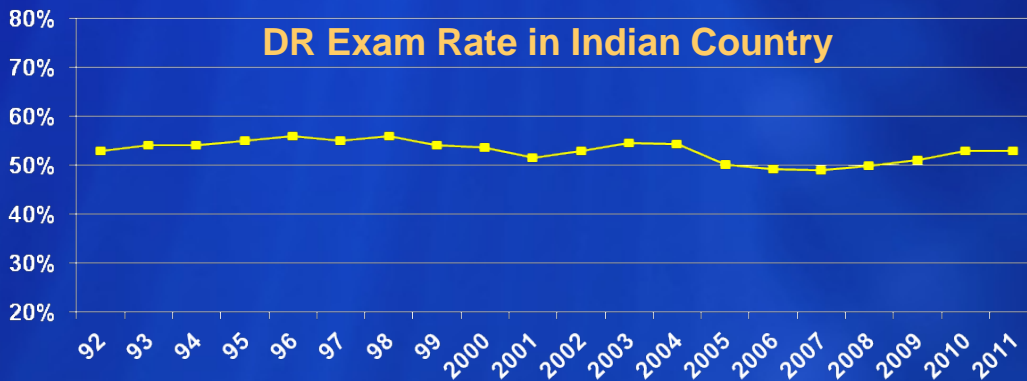
Challenges

- **Productivity**
- **Imager experience and proficiency**
- **Reimbursement**
- **Travel- training, support**

IHS-JVN Program

Using Tmed Innovation to Achieve a Public Health Outcome with a sustainable Business Plan

- Compliance with standards of care and HQ requirements
- Compliance with GPRA goals
- Decreasing avoidable vision loss due to DR





Phoenix Area IHS

Telemedicine: Technology for Delivery of Care

PAIHS

15 August 2012

Mark B. Horton, OD, MD

Director, IHS/JVN Teleophthalmology Program



- QUESTIONS



Phoenix Webinar Schedule-August

Overview of The Indian Health Care Improvement Act

- **August 21:** The learning session will provide an overview of The Indian Health Care Improvement Act- Reauthorization specific to benefits, exemptions, and key provisions of the Indian Health Care Improvement Act.

