Hi. Welcome everybody.

I’m Barbara Burtner. I’m a medical oncologist and work on head and neck cancer and I’m really like I could not be more extraordinarily delighted than I am to be today presenting Dr Saral Mehra as our grand round speaker.

Doctor Mehra is an associate professor of surgery in otolaryngology and head and neck surgery. He received his medical degree from Columbia University College of Medicine.
Physicians and Surgeons in New York, also obtained an MBA there and went on to residency in Otolaryngology Head neck surgery at New York Presbyterian Memorial Sloan Kettering, and then completed his training with a extremely coveted fellowship in head and neck and thyroid cancer surgery at Mount Sinai, including Subspecialization in complex reconstruction. His clinical practice focuses on treating patients with head and neck salivary and thyroid diseases, particularly those patients who need a very advanced resection.
or advanced reconstruction.

And I’ve been privileged to share many hundreds of patients with him. And I can like very personally say his oncologic and reconstructive outcomes are exceptional. And so his primary research interest ties in this very nicely because he focuses on measuring and improving quality in the treatment of head neck cancers and I think one of the central conundrum. Our field is how do we take exceptional care and and broaden its accessibility and broaden its applicability.
So he’s going to be talking about quality and outcomes research and head neck cancer from bench to bedside with Yale leading the charge. Cyril.

Thank you so much for that introduction Barbara and thank you everybody for logging in and listening to this talk. I know it’s a diverse group of basic scientist clinical researchers and hopefully some outcomes researchers out there as well. So that’s my topic. It’s been discussed.
OK, so I have no financial disclosures, so I couldn’t do a head and neck research talk without mentioning 2 important studies recently published, of which Yale specifically Doctor Burtness was lead author on both of these very different types of studies. But these are practice changing studies recently published. Um ECOG 3311 looked at T1 and T2 resectable HPV positive oropharynx squamous cell carcinoma and keynote O48 looked at locally
00:02:45.458 --> 00:02:47.770 the opposite end of the spectrum,
NOTE Confidence: 0.930024702
00:02:47.770 --> 00:02:50.240 locally incurable recurrent or metastatic
NOTE Confidence: 0.930024702
00:02:50.240 --> 00:02:52.178 head neck squamous cell carcinoma.
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00:02:52.178 --> 00:02:53.758 What I’ve put up here,
NOTE Confidence: 0.930024702
00:02:53.760 --> 00:02:56.184 I’m not going into details of these studies,
NOTE Confidence: 0.930024702
00:02:56.190 --> 00:02:58.696 but what I’ve put up here are
NOTE Confidence: 0.930024702
00:02:58.696 --> 00:03:00.640 survival curves from these huge.
NOTE Confidence: 0.930024702
00:03:00.640 --> 00:03:02.760 Hugely important recent practice
NOTE Confidence: 0.930024702
00:03:02.760 --> 00:03:04.156 changing studies, OK,
NOTE Confidence: 0.930024702
00:03:04.156 --> 00:03:06.508 I’m not going to get into details
NOTE Confidence: 0.930024702
00:03:06.508 --> 00:03:08.420 about these over the next 45 minutes.
NOTE Confidence: 0.930024702
00:03:08.420 --> 00:03:10.308 What I really want to do though is
NOTE Confidence: 0.930024702
00:03:10.308 --> 00:03:12.165 convince you of two things and I think
NOTE Confidence: 0.930024702
00:03:12.165 --> 00:03:14.295 I may have already done the first one
NOTE Confidence: 0.930024702
00:03:14.295 --> 00:03:16.077 because it doesn’t take much convincing.
NOTE Confidence: 0.930024702
00:03:16.080 --> 00:03:17.992 Large scale multi institutional
randomized control trials are important and they can lead to practice changing innovations in the care of cancer patients. Any cancer, I’m going to put a check mark beside that already. Based on that first slide and which you probably already know, but really what I want to do is tell you that the quality, that quality of care research or call it what you will, patient reported outcomes reaches patient centered outcomes research. Comparative effectiveness research goes by different names at different times.
But when you can take this from the bench to the bedside, we can have a remarkable impact on patient outcomes. And not only that but this type of research is actually necessary. For I'll put in quotes the real science to mean anything. That's the basic scientist, the clinical trials. That's what I want to convince you of. By the end of this talk, I'm going to start with a case. This is a 52 year old man. This is actually very recent. And within our system,
OK, the very recent case, 52 year old man never smoker 2.9 centimeter right neck mass and a right tonsil mass was seen in our system and had a right tonsil mass. Biopsy showed poorly differentiated squamous cell carcinoma and the P-16 stain was strongly and diffusely positive. The patient went for surgery. And what the pathology identified with the tonsillectomy and a neck mass excision was a P-16 positive cancer, 3 centimeters extending to the margins of resection and a 2.7 centimeter node with no ENE.
And a few other nodes also that came with the specimen.

So this patient was then referred for radiation and chemotherapy.

There’s a positive margin.

The guidelines say radiation chemotherapy was then re referred to but by care center physician to the head neck disease team at the Big House.

And this was interesting because a few things first of all was staging completed prior to treatment was one of the questions that came up when they were discussed.
And the answer was no.

And then more important was the latest science applied to this patient ECOG 3311 had already come out.

I told you this is a very recent case and preoperatively this patient will be in the low risk category of T1N1 cancer where we could potentially operate. And go to observation, no radiation, no chemotherapy and this patient have a 94% progression free survival based on the data from ECOG 3311. But now this patient has a positive margin.
Now he's in the high risk category and now he technically should go on to chemotherapy and radiation. Nothing about this tumor change, nothing about the patient changed, about the biology changed, but now the treatment recommendation could be different. So we had a long discussion in tumor board. And what we decided to do after multidisciplinary team care was complete, the staging taken for transoral robotic surgery to clear that margin and do a formal neck dissection. Unfortunately, this patient did have to escalate.
after a discussion, we did decide to escalate his therapy to radiation because of the original positive margin and discussing the risks and benefits with the patient. Controversial, but that’s what we decided to do. OK. So that’s my case. Some kind of frames, this discussion, so some background and definitions. What is quality in cancer care? I’m not going to read all these, but if you look at some of the literature on quality and cancer care nationally,
they have all these fancy definitions. But this is what I think is just, it’s so simple, so simple and you all know this already, I know, but it’s just getting the right care to the right patient at the right time and doing it every time. That’s it, that’s quality. In healthcare, especially cancer care. So what went wrong with this patient? This patient is going to do fine. The survival rate still 90% plus, you know, it wasn’t technically harmed other than treatment and functionally.
and maybe some side effects, but he's going to live, he's going to have a good outcome. But, but I would argue this wasn't the highest quality of care and it wasn't applying the latest science. So if anyone here has been to Business School, you would have read a lot about Edward Edwards Deming, who created basically the Toyota Quality Improvement process and brought you know, car production to the
highest quality in Japan.

And I think he said it best and it really applies to cancer care.

What the fault in the interpretation of observations seen everywhere is just suppose that every event, any defective mistake and accident is attributable to someone, usually whoever’s closest at hand or some special extraordinary event. But the fact is, it’s not the people that are the issues, the system that doesn’t work when there’s errors and mistakes.

The Institute of Medicine, in their crossing the Quality Chasm report,
said it well that poor quality care occurs not because of a failure of goodwill or knowledge or effort or resources, but because of fundamental shortcomings in the way cancer care is organized. There’s no bad doctor, there’s no one who wants to harm a patient. That I know of at least. But the system can be the problem. So how do we measure quality? There’s really three ways what a lot of us do, and what was done all the time, many years ago, was implicit or expert review. I’m in an ivory tower.
I say it's high quality.
And so it is. That's it.
But there are scientific ways to measure quality,
specifically structure and process metrics.
So why is structure so important?
Take a moment to talk about this.
So right now,
I'm sure you can all recognize the organization of cancer care most of the US,
the patient at least in the middle, and then doctors all around them, and communication can be very,
very challenging.
This happens to be from a publication.
And regarding thyroid cancer cares, we've got nuclear medicine specialists, we've got radiologists, we've got endocrinologist, medical oncologists and the patients. Left in the middle and can be quite confused. This is the structure of hospital care in the United States. There's about 6000 hospitals registered in the United States. About 1500 of them are registered by the ACS Commission on Cancer and about 71% are treated at ACS Commission accredited hospitals. And I'm sure you've heard of SEER.
which is a representative national database and that captures about 14% of cancer cases, but is supposed to be and probably is representative of cancer care within the country. So you can get incidence rates from Seer, where you can't get that from NCDB, which is a, the Commission on cancer data set. There's a number of comprehensive cancer centers, there's cancer centers, there's community cancer centers, all designated by the NCI. And I tried to find how many surgeons or medical oncologist radiation
oncologists treat head and neck cancer. As you could guess, it’s pretty much impossible to find that. So the organization of US cancer cases so diffuse diverse that providers have not you as a provider, if you are a doctor, have not had to provide accountability for specific processes or outcomes for you specifically or at your center. OK, so now let’s get into some research, research and cancer quality that’s my background. So my research journey at Yale really is about quality of care,
patient centers, out centered outcomes.

And what I’m trying to do now is my version of bench to bedside.

So how do we take the science in outcomes research and apply it to patients? It’s really not just fluff. I know there’s real quote real scientists out there, basic scientists. Huge randomized control types of signs is out there. I think this is real and going to try and convince you of that. So my foray into patient centered outcomes research started in fellowship and these republished in my first year being here some pretty large.
reviews on thyroid cancer care and how can we measure and improve thyroid cancer care across the country. And I reviewed all the databases published these in thyroid with a nice team of colleagues. Um, kind of around the country. When I got to Yale, I saw, Oh my God, there’s actually a lot of people doing this stuff. People like Dan BofA and Ben Judson, and Kerry Gross, who were really nationally known
in quality of cancer care research,
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two of them being surgeons through
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basic and head and neck surgeons.
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So what I wanted to do first was,
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well, how are we doing it, Yale?
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I mean, are we delivering quality
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care at Yale? I had no idea.
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Many of these are even Dan and Ben.
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And you asked them,
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hey, how’s your quality,
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how’s your divisions quality,
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what’s your margin rate,
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survival rates for different cancers,
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nobody had any idea.
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So I tried,
I tried to figure this out and I created a head neck scorecard using some of the science and outcomes research. We had structural metrics. We had process metrics, pretreatment, treatment post treatment and then of course outcomes, oncologic, functional and patient reported outcome metrics. We created this big scorecard, reviewed all the registry data over. A few years divided things into surgical outcomes, medical outcomes. I’m not going into the details of this, and what I found was that it was
actually hard to get the data.

And 2nd,

we didn’t really have national

data with the country as a whole.

We were sort of in the realm of expert

opinion to say how we were doing.

So it was under that idea that I began

the first stage of research in measuring

quality and head and neck cancer.

So these were some of the

areas of interest that I had.

I started first with volumes and outcomes,

a structural metric. I didn’t spend

much too much time here because.

It’s been published and researched
and sort of known to death.
Higher volumes lead to better outcomes.
It's been known for years and every aspect, probably of medicine definitely surges, definitely surgery.
Here's a few studies published 2009, 2010. And I was surprised to see even people are still publishing the volume outcomes relationship studies.
That was pretty well known, but I didn’t want to be left in the lurch. So I looked at this as well.
I said well, how about.
I tried to look at Connecticut.
00:14:37.600 --> 00:14:38.958 Turns out the NCDB won’t give you
NOTE Confidence: 0.864245848636363
00:14:38.958 --> 00:14:40.133 the data for Connecticut because
NOTE Confidence: 0.864245848636363
00:14:40.133 --> 00:14:41.503 there’s not that many hospitals
NOTE Confidence: 0.864245848636363
00:14:41.503 --> 00:14:42.853 and you could probably identify
NOTE Confidence: 0.864245848636363
00:14:42.853 --> 00:14:44.533 which hospital is which one of you
NOTE Confidence: 0.864245848636363
00:14:44.533 --> 00:14:46.700 were trying to do the research.
NOTE Confidence: 0.864245848636363
00:14:46.700 --> 00:14:49.108 For example,
NOTE Confidence: 0.864245848636363
00:14:49.108 --> 00:14:51.060 I don’t think there’s too many
NOTE Confidence: 0.864245848636363
00:14:51.060 --> 00:14:53.856 hospitals in Connecticut that do 200.
NOTE Confidence: 0.864245848636363
00:14:53.860 --> 00:14:56.434 Analytic head and neck cancer cases,
NOTE Confidence: 0.864245848636363
00:14:56.434 --> 00:14:59.520 but I was able to get New England data
NOTE Confidence: 0.864245848636363
00:14:59.520 --> 00:15:01.557 and so we looked at data for upper
NOTE Confidence: 0.864245848636363
00:15:01.560 --> 00:15:04.157 aerodigestive tract cancers and we
NOTE Confidence: 0.864245848636363
00:15:04.157 --> 00:15:08.602 looked at average case volume by hospital,
NOTE Confidence: 0.864245848636363
00:15:08.602 --> 00:15:11.920 which was about 26 cases per year with a
NOTE Confidence: 0.864245848636363
00:15:11.920 range of 1 case to 213 cases per year.
And we did our standard multivariate analysis controlling for age, stage grade, comorbidity, insurance status and we found that worse survival was associated with. Treatments at a facility seeing less than 50 cases per year compared to greater than 50 cases, a pretty impressive hazard ratio. Not new, not novel. But I wanted to know. I'm Canadian. I'm in New England. How are we doing? And that gave me the the answer. So then I went on to a series of studies.
looking at timeliness in cancer care.

So why is timeliness important?

Well, timely diagnosis and treatment is associated with improved perceived quality of care and lower patient anxiety.

And then one could say that assuming the disease progresses while waiting for treatment, delays may result in more extensive treatment and possibly increased costs. And 3rd, the impact of treatment on true health outcomes like patient
reported outcomes,

functional outcomes,

even survival a little bit less clear

and this is going back you know 10 or 15, about 10 years when I was

So we started a number of studies.

First we looked at treatment

delays in oral cavity,

squamous cell cancer across the country.

We had three objectives in this

study and this study was presented

at the American Head Neck Society

meeting as one of the best papers

at the meeting and we looked at
national trends in treatment time.

Tables in patients with oral cavity cancer.

So just get some benchmarks.

How is the country doing? How can we know how we’re doing at Yale or you’re doing wherever you are? If we don’t know what a benchmark is, then we wanted to identify factors associated with extended treatment time intervals and then to determine if delays in treatment intervals were associated with survival. These last two were more secondary outcomes. Really my main purpose of this was just to see how is the country doing. So we went through our standard.
Inclusion exclusion criteria of oral cavity squamous cell carcinoma treated over a 14 year period using the National Cancer database and ended with about 6000 patients in the final cohort with oral cavity cancer. These are the time intervals that we measured diagnosis to surgery was diagnosis to treatment initiation. Surgery to RT start was what it says and then RT start to RT radiation start to radiation end was at its was as it says and then we had total treatment package which is from when you started treatment to
ending treatment and then diagnosis
So these are the intervals
These are box plots you can hear
you see huge variation across the
country in every single one of
these treatment intervals.
As a quality researcher,
if you are when you’ll know,
or any researcher really would know,
that the wider these box plots,
the greater variation and a huge
opportunity for quality improvement
is to shrink these box plots.
We looked at survival.
Again, secondary outcome, probably not the best database to look at survival. Plus we only had overall survival. What we found was that radiation duration if you were in the median or below versus the 4th quartile was significantly associated with worse survival, meaning treatment breaks during radiation. Not new, not novel but that’s what we found. And look at this survival curve. This is RT duration. You compare this to the ECOG 3311 and the keynote O48 survival curves,
which I flashed up there.

I think this is a little bit more impressive.

Not as great a study but so many more problems with it but I just do that for a visualization and these were this is what I thought was more interesting though was the now finally we had time intervals across the country at NCNC DBCC accredited hospitals for median times to treatment and and this is what we’re at.

We did this a lot and we did it for oral cavity.

We did it for oral pharynx treated with surgery.

We did it with oropharynx.
treated nonsurgically.

We did it for hypopharynx cancer. Did it for salivary cancer and we established benchmarks.

We had box plots for all of these. We looked at survival outcomes for all of these.

So I told you about oral cavity already. Here’s oral pharynx, look at the wide variety in the whole huge variation in treatment for oral fairness cancer treated surgically. Here’s a survival curve.

We’re seeing big differences if you were
delayed versus not delayed and this was the same for oral pharynx cancer treated.

Nonsurgically multivariate analysis controlling for all the standard factors that we always control for hypopharynx, cancer, salivary cancer, it goes on.

So my point here is that analysis of variation in treatment time intervals really can identify opportunities for us to improve.

2nd, we found that there’s a number of factors associated with delays. I didn’t show you that that data here, but these can also are often related to access and coordination of care.

And so the third finding here was that every effort should be made to prevent
prevent radiation treatment breaks,
because in every single one of those there was a significant association with overall survival, meaning worse if you had treatment. And this matters to patients, too. Here's a patient with an oral cavity cancer diagnosed elsewhere delayed getting in, starting with an oral cavity cancer, but eventually, when he came to treatment, extending through his skin, through the mandible. Original CT scan,
no mandible invasion and here we are

taking this cancer out mandibulectomy

composite SO4 mouth mandible skin,

using the fibula to reconstruct

with a plate and using the skin

on the outside to reconstruct so.

Cancer is out, but at what cost?

Because of delay in diagnosis,

delay in treatment,

delay in diagnosis is a whole

other discussion,

which I don’t talk about and

I don’t really study.

The Commission on cancer has

just in March of this year,

very recently finally put in their
NOTE Confidence: 0.896226884545455
00:21:45.456 --> 00:21:47.553 first head and neck oncology quality
NOTE Confidence: 0.896226884545455
00:21:47.553 --> 00:21:50.094 metric that’s going to be measured at
NOTE Confidence: 0.896226884545455
00:21:50.094 --> 00:21:52.090 every single ACS accredited hospital
NOTE Confidence: 0.896226884545455
00:21:52.090 --> 00:21:54.935 across the country and that’s time to
NOTE Confidence: 0.896226884545455
00:21:54.935 --> 00:21:57.360 initiation of post operative radiation.
NOTE Confidence: 0.896226884545455
00:22:00.630 --> 00:22:02.592 This my study didn’t really
NOTE Confidence: 0.896226884545455
00:22:02.592 --> 00:22:04.577 have shown that 42 weeks, 42 days.
NOTE Confidence: 0.896226884545455
00:22:04.577 --> 00:22:10.064 Is a big cut off to affect survival to start
NOTE Confidence: 0.896226884545455
00:22:13.340 --> 00:22:14.761 So this is a new quality metric
NOTE Confidence: 0.896226884545455
00:22:16.210 --> 00:22:18.973 just so you know. OK.
So then did volume outcomes, did timeliness.

So then I wanted to look at surgical quality. How do we measure that? How do we benchmark this?

And so we started looking at a number of things. So this was Ben Judson, was a lead author on this, but our whole team was involved where we look, tried to identify. Thresholds for lymph node yields. For oral cavity cancer, so our objective in this study was to determine lymph node yield threshold.
and oral cavity squamous cell cancer that might impact survival. This was a very interesting study because we used the NCDB to establish those yields and then validated it in SEER. To find the threshold, we looked at the clinically end zero oral cavity cancers versus the clinically and positive oral cavity cancers. Hazard ratios based on number of the lymph node yield basically and after regressive statistical models,
we basically eventually found that there was a difference at 16 lymph nodes for N0 neck N, and after adjusting for all sorts of factors, we found a survival benefit, overall survival and cause-specific survival based on lymph node yields. This is using SEER data so we finally had disease. Specific survival, which we don’t have in NCDB. So again, if you look at these survival curves, I think they’re quite.
Not provoking.

This study came out at the exact same maybe like a three months after our study and this looked at all of head neck cancer and it looked at used 18 lymph nodes, so kind of an arbitrary number they picked. To be honest based on some other single institution studies they didn’t use the same statistical rigor that we use in oral cavity but it applied to all head neck cancer and so it was more applicable in 18 has become the big number for head and neck cancer partly.
based on this study but again. 

Think what you will just have a #18 lymph nodes. Big survival difference.

So that's lymph node yield.

Then we wanted to look at positive margin rates and this is another study that we did trying to again figure out positive margin rates in this country for oral cavity, squamous cell cancer, what is the baseline?

And again we found incidence of positive margins based on this study and we did look at the volume outcomes relationship and the facility setting. And if you were to academic center,
your risk of having positive margins was significantly less. 20 cases(201,135),(354,151) seem to be a good threshold, but again you see a lot of variety. Variation across the country. We also looked at transoral robotic surgery. So the transoral robotic surgery is FDA approved for T1T2 oropharynx cancers. And what I wanted to know was well what is the positive margin rate nationally and then what factors are associated with positive margin. So we did our standard inclusion exclusion criteria.
had a transoral robotic surgery for oropharynx squamous cell carcinoma and what did we find overall.

A 17% positive margin rate in this country and it varied by T stage. You can see that all here. We also found factors specifically Lymphovascular invasion, T classification and again facility volume of patients treated at high volume, academic centers versus non academic and high volume versus low volume.
So in the year since FDA approval, what we found is that the positive margin rate for towards the 17%. But if you look at the ECOG 3311 trial, the positive margin rate of credentials academic surgeons was 3.3%. And if you look at pooled data from 3 clinical trials looking at academic single institution studies or even a systematic reviews, we’re looking at significantly less than the real world. Positive margin rate, so there is and then this study.
also showed a linear association between positive margins with T32 and T4 tumors greater than 28%. So these patients are the ones that are going on to chemotherapy and probably had no benefit from transoral robotic surgery based on their current treatment paradigms. We did this for parotid cancer, I won’t get into those details. And then this is a interesting study that combined margin rates nationally and lymph node yields and what they looked at was treatment at hospitals that attain a high
rate of negative margins.

So if you have a hospital that’s high rate of negative margins and lymph node yields of more than 18. They found that there is a significant association with improved survival if you did. Both of those and these predicted outcomes independent of those generally modifiable characteristics including the volume outcomes relationship. These were independents of volume of the hospital but only 105 hospitals out of 1000 in the country achieve.
negative margins in 90% or more patients and. If you look at lymph node yields of greater than 18, only 199 hospitals out of 1000 consistently achieved lymph node yields of 18 or more, meaning in an 80% or more of that’s the case. We’re not looking for 100%, 80% of cases having 18 or more lymph nodes. So in contrast to the traditional emphasis on the volume outcomes relationship, this showed that negative margins and lymph node yields can actually neutralize the effect of hospital volume. OK. So then another area that I want to look into was guideline adherence.
and this it came up because of a study published in 2009 from MD Anderson.

They looked at 107 patients who came to them for second opinions with persistent or recurrent disease. They had persistent or recurrent disease and they wanted to look at well what’s going on. What they found was that 43% of patients had NCCN guideline non-compliance is the term that they used. And they try to find some factor associated with it, even the specific referring physician, the type of physician.
the subset of disease,

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insurance status, age, sex.

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And there was nothing that was

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significantly associated with why someone

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would get NCCN noncompliant treatment.

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So I’m in the same vein.

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As you can see my theme here is,

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well, how’s the country doing?

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You know we know how single institutions

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are doing, but how about the country?

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What’s the benchmark?

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What are we aiming for?

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So we undertook a study to look

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at national NCCN guideline,

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not non adherence rates.

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That was the main objective.
We also wanted to look at associations between non adherence and survival. In head neck cancer, we wanted to look at reasons for non adherence and factors associated with non adherence as secondary aims. So this is our we started with 375,000 patients treated from 2004 to 2013. And we tried to figure out which ones were not adhering and which ones were adherent to NCCN guidelines and not going into the details. This is how we define non adherence by site. It’s just look at the NCCN guidelines.
It’s actually pretty easy and they were surprisingly consistent in all these areas throughout the entire years of the study. We've got the guidelines going back to when this study started actually from the NCCN. And these are the numbers. So if you go to 2004 non adherence rates throughout this country, it was 30% for head and neck squamous cell carcinoma by 2013, we’re still looking at almost 1/4 of patients are getting non adherent guideline non adherent care within this country. We looked at this by sub site
for oral cavity cancer,

46% of patients are getting non adherent care and oral pharynx,

much lower hypopharynx,

larynx and sinuses here.

And then we looked at survival.

So if you have non adherent care versus adherent care to NCCN guidelines we found a significant association with overall survival.

Again a multivariate analysis controlling for all the typical factors.

And then we looked at factors associated with guideline not adherence,

black race, age over 65,
comorbidity, non private insurance,
higher T stage and then being treated and non academic facility.
So I like this quote because it really talks about highlights why clinicians already know the information contained in guidelines and this was years ago, this was 1999, now they’re so accessible.
So I’m going to extend this to say when physical clinicians. Know how to get the guidelines within minutes at their fingertips.
Those clinicians who want to improve quality need to redirect their
efforts to identify the barriers. 
It’s not knowledge that stand in the way of behavior change. 
So by addressing the barriers that prevent adherence to NCCN guidelines and their treatment protocols, 
I think there is a great opportunity for us to improve survival. 
I would even say a responsibility. 
Final area of research I wanted to look at and I haven’t done much in this yet. 
So I’m going to quote a a different study by Bevin who’s the chair at Minnesota University of Minnesota and he was actually a Robert Wood.
Johnson scholar here at Yale and very well known and outcomes research. And that cancer he just wanted, this was a spoke to him about his very controversial study when he published this because it was within his own network of patients that he was seeing looking at patients who were treated with radiation. Therapy at the academic center versus the non academic center and found significant differences in five year survival on there were similar rates of treatment completion, more advanced cancers at the academic center.
Multivariate analysis really you know statistically rigorous study couldn’t say why but there was. OK.

So the last thing I want to talk about is really this concept of bench to bedside for the patient centered outcomes researcher and that’s what I’ve been doing over the last year or so. I’ve been doing over the last year or so. What I wanted to do now is take all this national benchmark data we had. This national benchmark data we had. We knew what good quality was or at least what the standard of care was across the country.
how is Yale New Haven Health system doing?

And so this is what we did, we looked.

At tumor registry data from Yale, New Haven Hospital, Bridgeport Hospital, Greenwich Hospital, L&M and Westerly.

So our entire network and we got all the analytic oral cavity cases from 2012 to 2018.

And we looked at a number of these quality metrics for which we now had national benchmarks.

And we looked at the positive margin rate.

We looked at lymph node yields.

greater than or equal to 16 adherence

rates to NCCN guidelines and time to adjuvant therapy within six weeks.
So we started with 500 patients and these were the three groups of patients that were treated academically surgery and radiation or all their treatment if there was no radiation at the academic only center, Community Center being the opposite end and then the combined group. So they had in this combined group, it was always surgery at the main center and radiation elsewhere. For some reason it didn’t go the other way. And these were our key findings. There was a higher positive surgical margin rate within our health.
00:34:35.752 --> 00:34:38.110 system at the Community hospitals,
NOTE Confidence: 0.833967161111111
00:34:38.110 --> 00:34:39.136 12% versus 2.5%.
NOTE Confidence: 0.833967161111111
00:34:39.136 --> 00:34:41.188 There was a lower likelihood to
NOTE Confidence: 0.833967161111111
00:34:41.188 --> 00:34:43.412 meet that bottom lymph node yield
NOTE Confidence: 0.833967161111111
00:34:43.412 --> 00:34:46.008 threshold of 16 lymph nodes and a
NOTE Confidence: 0.833967161111111
00:34:46.008 --> 00:34:47.808 neck dissection at the community,
NOTE Confidence: 0.833967161111111
00:34:47.810 --> 00:34:48.887 59% versus 90%.
NOTE Confidence: 0.833967161111111
00:34:48.887 --> 00:34:50.682 There were decreased rates of
NOTE Confidence: 0.833967161111111
00:34:50.682 --> 00:34:53.035 adherence to NCC and guidelines in
NOTE Confidence: 0.833967161111111
00:34:53.035 --> 00:34:54.995 other hospitals within our Network,
NOTE Confidence: 0.833967161111111
00:34:55.000 --> 00:34:57.778 76 versus 86% and adjuvant radiation
NOTE Confidence: 0.833967161111111
00:34:57.778 --> 00:35:00.930 therapy within six weeks it was the same.
NOTE Confidence: 0.833967161111111
00:35:00.930 --> 00:35:03.314 If you were all academic or all community,
NOTE Confidence: 0.833967161111111
00:35:03.320 --> 00:35:05.060 but if you fragmented your care,
NOTE Confidence: 0.833967161111111
00:35:05.060 --> 00:35:06.852 it was significantly less.
NOTE Confidence: 0.833967161111111
00:35:06.852 --> 00:35:09.640 22% of patients, when fragmenting their care,
NOTE Confidence: 0.833967161111111
00:35:09.640 --> 00:35:13.786 received radiation therapy within six weeks.
NOTE Confidence: 0.833967161111111
00:35:13.790 --> 00:35:15.490 So it sounded negative originally,
NOTE Confidence: 0.833967161111111
00:35:15.490 --> 00:35:16.406 but then we said, hey, well,
NOTE Confidence: 0.833967161111111
00:35:16.406 --> 00:35:17.510 we have national benchmarks.
NOTE Confidence: 0.833967161111111
00:35:17.510 --> 00:35:18.286 How are we doing?
NOTE Confidence: 0.833967161111111
00:35:18.286 --> 00:35:19.450 It turns out that we’re actually
NOTE Confidence: 0.833967161111111
00:35:19.491 --> 00:35:20.889 doing pretty good within the system.
NOTE Confidence: 0.833967161111111
00:35:20.890 --> 00:35:23.446 The, our numbers are on par with the nation.
NOTE Confidence: 0.833967161111111
00:35:23.450 --> 00:35:25.564 We’re not any worse than the national
NOTE Confidence: 0.833967161111111
00:35:25.564 --> 00:35:27.630 benchmarks in our community hospitals.
NOTE Confidence: 0.833967161111111
00:35:27.630 --> 00:35:29.254 If you look at the national positive
NOTE Confidence: 0.833967161111111
00:35:29.254 --> 00:35:30.629 margin rates based on our studies,
NOTE Confidence: 0.833967161111111
00:35:30.630 --> 00:35:33.436 oral cavity cancer is almost 13%.
NOTE Confidence: 0.833967161111111
00:35:33.436 --> 00:35:36.866 Our community partners are 12%.
NOTE Confidence: 0.833967161111111
00:35:36.870 --> 00:35:39.033 I mean our academic center is 2.5%.
So that’s a significant difference, but the system is.

There’s a lot of reasons that there could, you know, there could be differences.

For example, availability of frozen section, access to advanced reconstructive surgery, we can get more aggressive on the resection, constant communication between pathologists and surgeons, presence of trainees, perhaps higher case volumes, how margins are taken by surgeons or how they’re assessed by pathologists. Countless reasons this for this, all theoretical.
The other point about positive margins other than affecting survival is that it can often lead to unnecessary escalation of cares like that oropharynx cancer case that I showed you. But in this cohort of patients within our system, two patients in the Community only group received adjuvant chemotherapy plus radiation for early stage disease. So stage 1/2 cancer positive margin went on to chemotherapy and radiation. There’s no LINOP and I in those cases. And when you look at non adherence rates, again nationally for all of cancer,
26% of patients for head neck

NOTE Confidence: 0.833967161111111

00:36:48.418 --> 00:36:50.161 cancer nationally are non adherence

NOTE Confidence: 0.833967161111111

00:36:50.161 --> 00:36:52.186 with guidelines for oral cancer.

NOTE Confidence: 0.833967161111111

00:36:52.190 --> 00:36:54.212 If you’ll recall based on our

NOTE Confidence: 0.833967161111111

00:36:54.212 --> 00:36:54.886 previous studies,

NOTE Confidence: 0.833967161111111

00:36:54.890 --> 00:36:57.362 46% of patients are non adherent

NOTE Confidence: 0.833967161111111

00:36:57.362 --> 00:36:58.598 in our community.

NOTE Confidence: 0.833967161111111

00:36:58.600 --> 00:37:00.182 Yale New Haven Health System is doing

NOTE Confidence: 0.833967161111111

00:37:00.182 --> 00:37:01.987 pretty good when you look at national data,

NOTE Confidence: 0.833967161111111

00:37:01.990 --> 00:37:03.680 much better than the

NOTE Confidence: 0.833967161111111

00:37:03.680 --> 00:37:05.370 country for oral cavity cancer.

NOTE Confidence: 0.833967161111111

00:37:05.370 --> 00:37:07.466 But if you look at the academic center,

NOTE Confidence: 0.833967161111111

00:37:07.470 --> 00:37:09.165 we see a significant difference

NOTE Confidence: 0.833967161111111

00:37:09.165 --> 00:37:11.110 and again no one looking for

NOTE Confidence: 0.833967161111111

00:37:11.110 --> 00:37:12.558 100% adherence to guidelines,

NOTE Confidence: 0.833967161111111

00:37:12.558 --> 00:37:14.570 that’s not possible, a lot of reasons,
sometimes you can’t.

Adherence to guidelines, but we’re looking to benchmark against the country and against each other. So.

We looked at lymph node yields and this is where things got a little bit more interesting.

Nationally, greater than or equal to 16 lymph nodes, 70% of patients have more than 18 lymph nodes in their neck dissections. In our community,
59% and in the academic center, and you can see the huge variation as well everywhere really. Again, there's multiple reasons for this. How pathologists count lymph, it's not all surgical related, how pathologists count lymph nodes, but maybe also the quality of the neck dissection and this these can sell a lot of these can be modifiable treatment factors. So in this study, we found that treatment of oral cavity cancer at Community facilities within our system may increase the likelihood of positive margins,
lower likelihood of adequate lymph node yields and decrease adherence. NCCN guidelines. Not only that, but if you fragment your care, you can have a lower likelihood of achieving radiation initiation within six weeks. A lot of problems with this study, but you know, data were collected retrospectively. We found a lot of differences in process related metrics and other studies have shown association with survival.
This study in and of itself did not show that there was any difference in survival, definitely not powered for this. It was not the main outcome and of course there are socioeconomic and other factors that can impact patient care delivery and confound the results. For example, patients who are willing to travel to the academic centers may differ systematically from those who seek care closer to home.
data going back to 2012 to 2018.

Smilo has, I think, been aware of this. The leadership has been aware of this and there's been a lot of things that have changed to improve quality even in the last five years.

And I'd love to do this study and I will do the study a few years from now as well and see how much better we are.

For example, oncology care pathways have been initiated. Community hospitals and disease teams have been better integrated at SMILOW. We are creating local disease teams, experts at community hospitals primarily.
Physicians at the academic Center have established clinics in surrounding care centers. We're trying to bring culture from one place to another as well and better integrating and aligning culture across our care centers. Of course, advancement in ER has helped a lot. This is going back to 2012 when the ER was first. Initiated in the health system, we have more clinical trials and they’re offered at care centers and there’s a lot of other
improvements that are ongoing.
And I think delivering high quality care across the system for head and neck cancer is an important part of our system's growth and integration.
So really what I think is that integrated health systems can leverage the strength of the academic center to figure out a way to disseminate best practices, to break those structural barriers within our network, to improve patient care and bring high quality care, whether it's closer to home or bring the patients here. But we can do this and dare I say
we have a responsibility to do this, but how are we going to overcome these structural barriers? So bringing it back to the patient. You know, processing, quality care improves survival. It means more than just the process of care and survival. It means more than just being cancer free. Say Left and right. Just to the outside. Hi, this is **** Morris. You may have seen me on some of
my Facebook or Internet posts.

I had tongue cancer and doctor Mayer.

Doctor Mehra operated and after

the portion of the tongue that was
cancerous was removed, he replaced

it with a skin graft from my forearm.

I’m now speaking to you 5 weeks to

the day after surgery and I no longer

feel like I have marbles in my mouth.

I can speak clearly and

it’s entirely due to him.

Yeah, Mike, partial Larry.

Mack Larnax, see perfect was four months ago.

And.

I’m amazed that I have this voice.
00:42:05.750 --> 00:42:06.240 Go
NOTE Confidence: 0.9916736
00:42:10.050 --> 00:42:12.828 1234567. Do you have a feeding tube?
NOTE Confidence: 0.9916736
00:42:12.830 --> 00:42:17.890 No. Do you have a tracheotomy? No.
NOTE Confidence: 0.9916736
00:42:17.890 --> 00:42:21.160 Ohh, I had my surgery three months ago.
NOTE Confidence: 0.23097047
00:42:24.860 --> 00:42:26.400 Free **** pie,
NOTE Confidence: 0.821764675
00:42:27.350 --> 00:42:28.718 I had my surgery
NOTE Confidence: 0.764081355
NOTE Confidence: 0.764081355
00:42:31.150 --> 00:42:33.439 So you can see these are patients
NOTE Confidence: 0.764081355
00:42:33.439 --> 00:42:35.299 who where function is important.
NOTE Confidence: 0.764081355
00:42:35.300 --> 00:42:36.968 It’s not just that they’re alive
NOTE Confidence: 0.764081355
00:42:36.968 --> 00:42:38.768 and they’re cancer free and they
NOTE Confidence: 0.764081355
00:42:38.768 --> 00:42:40.028 had guideline compliant care,
NOTE Confidence: 0.764081355
00:42:40.030 --> 00:42:41.902 but you have a laryngectomy patient
NOTE Confidence: 0.764081355
00:42:41.902 --> 00:42:43.859 speaking hands free thanks to our
NOTE Confidence: 0.764081355
00:42:43.859 --> 00:42:45.167 speech and language pathologist.
NOTE Confidence: 0.764081355
00:42:45.170 --> 00:42:47.459 You’ve got patients who are in the
public speaking after having significant portions of their tongue removed, but high quality reconstructions. Partial laryngectomy is for salvage which are not done at, certainly not at in low volume places, saving the larynx. So I hope what I've done now is you already knew that randomized control trials are great. They lead to practice changing innovations in the care of cancer patients. But I hope you can have a better. Respect maybe for quality of care research as well.
We can have a remarkable impact on patient outcomes and I think it’s necessary for the quote real science to mean anything to patients. You have basic science researchers who feed the clinical researchers within clinical researchers feed the patient centered outcomes researchers and that’s what leads to better patient care. So Healthcare is remember this is getting the right care to the right patient at the right time every time. That’s quality cancer care. Thank you.
Are there any questions either here in the room or I know people are also potentially posting? Through the webinar. Yeah, Tommy. Open. COVID-19. I don’t know yet is a short answer. I think that’s it’s an area of active study. There are some small scale publications on that, but I think we’re going to know. Pretty soon, I can tell you our experience, but that’s not based on the data. Maybe Doctor Burtness has
more information about that, but I think we’re going to know better soon enough. I mean I think we saw a number of, I don’t know that we have stats on it, but we saw a number of patients with considerable delays in diagnosis. So I have a question. When we participate in, so dragging you back to the clinical trial side for a moment, but a really important consideration for surgically based trials is how do we set surgically based trials is how do we set what the benchmark is for the right surgery. And I know you’re participating in the Sentinel lymph node trial now,
sort of how does that credentialing process?
Sit with our own quality enhancement efforts.
It’s a good question.
I think you’re right.
It’s just exciting now to have surgeons involved in randomized control trials like ECOG 3311, it hasn’t happened a lot in head neck cancer. You know, I think that for clinical trials it’s different than patient these, these comparative effectiveness researchers because you need to know if the intervention is effective or not.
You need high quality surgeons every time they need to be credentialed and the surgical quality metrics are being monitored constantly and I think you need that for clinical research and I’m glad it’s there. But how you apply that to the real world I think is, you know at the second area of research interest. But I’m glad they’re credentialed high quality surgeons during the clinical trials. We have a question from Doctor Robinson in radiation oncology.
How do you disseminate these quality insights to the lower volume centers and are there specific guidelines for which patients should be referred for high volume? Is it practical to refer everyone with less common cancers like head, neck cancer? And if not, how do you feed these? These care care approaches to the lower volume centers. That's a great question. I think it's $1,000,000 question. If we could do that honestly I think we could improve survival more.
than the next billion dollar drug

basically and I think that’s our challenge that’s what we need to do.

I don’t know I think every system has a different approach.

I think Yale New Haven Health System is going to be different than memorial is going to be different than any health system but.

I don’t know what the right answer is, but we need to figure it out.

I guess I have a follow up question I guess I have a follow up question

to that and and that is some of the hypothesis you had about what

controlled let’s say the rate of
NOTE Confidence: 0.881876587142857
00:47:40.311 --> 00:47:44.948 margin positivity had to do with.
NOTE Confidence: 0.881876587142857
00:47:44.950 --> 00:47:49.380 Frozen margin evaluation communication.
NOTE Confidence: 0.871447651666667
00:47:52.010 --> 00:47:54.523 Are there components of that that
NOTE Confidence: 0.871447651666667
00:47:54.523 --> 00:47:56.730 could be enabled by telemedicine?
NOTE Confidence: 0.871447651666667
00:47:56.730 --> 00:47:58.886 So you know you referred to digital
NOTE Confidence: 0.871447651666667
00:47:58.886 --> 00:48:00.978 pathology once or twice in your talk,
NOTE Confidence: 0.871447651666667
00:48:00.980 --> 00:48:05.698 but are there ways that expert disease
NOTE Confidence: 0.871447651666667
00:48:05.698 --> 00:48:09.568 focused let’s say pathology evaluation?
NOTE Confidence: 0.871447651666667
00:48:09.570 --> 00:48:12.020 Could be extended through telemedicine.
NOTE Confidence: 0.900279335
00:48:14.150 --> 00:48:16.466 Yeah, I think that would be,
NOTE Confidence: 0.900279335
00:48:16.470 --> 00:48:19.585 I think that’s one way to bring expert
NOTE Confidence: 0.900279335
00:48:19.585 --> 00:48:22.315 level care across the system with
NOTE Confidence: 0.900279335
00:48:22.315 --> 00:48:24.606 telemedicine and I think pathology
NOTE Confidence: 0.900279335
00:48:24.606 --> 00:48:27.998 would be a great way to start actually.