Research Budget Oversight

Presented by Nora Disis, MD & Lauren Corulli

10:40am-11:40am

UW Husky Union Building

Research Budget Oversight:

Tips for Responsible Financial Management

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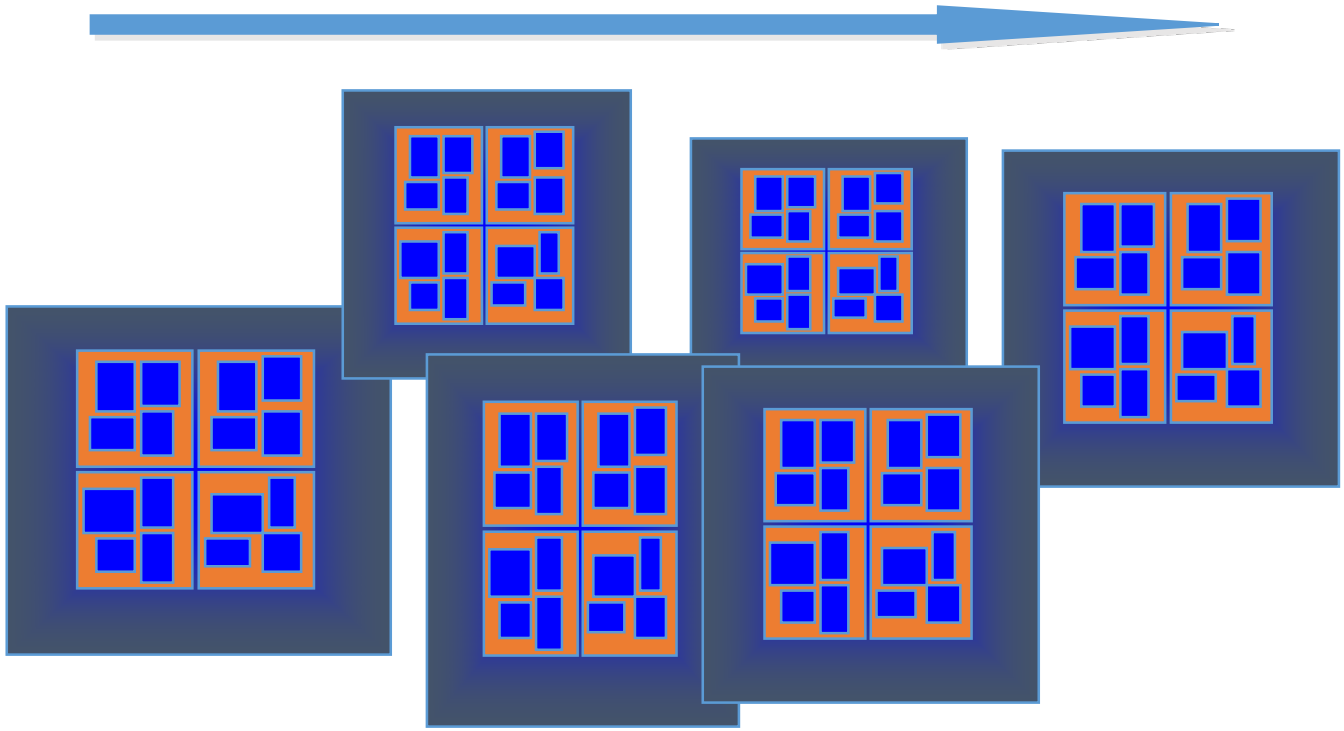
ITHS | Institute of Translational Health Sciences
ACCELERATING RESEARCH. IMPROVING HEALTH.

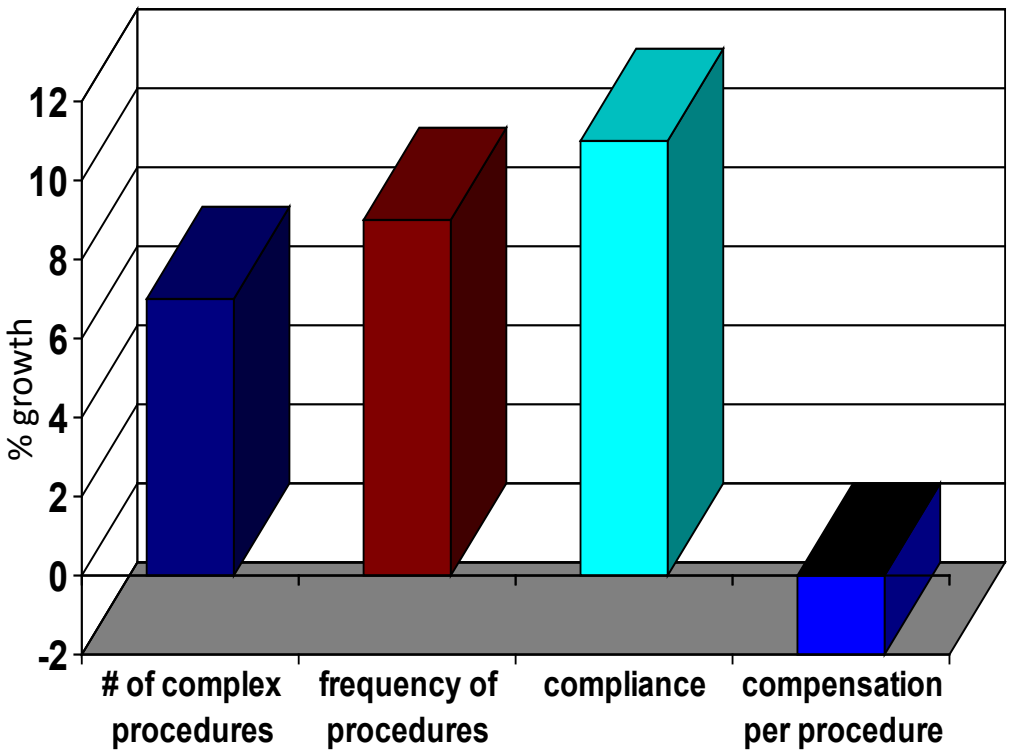
Your Career is a Series of Interrelated Projects



Success is many projects being conducted simultaneously- team development

The Reality for all Research, Including Clinical Research, is:

- Sites are required to perform at a higher level at lower cost differentials
- Functions required have become more complex; contract/budget negotiation, recruitment, logistics, and regulatory
- A JUGGLING ACT!



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Source: Tufts Center for the Study of Drug Development

Impossible Role of the Principle Investigator

- Clinician
- Researcher
- Fundraiser
- Recruiter
- Data analyst
- Creative genius
- HR manager
- Fiscal specialist
- Regulatory expert
- Significant other
- …Parent

At the End of the Day- YOU'RE the One Responsible

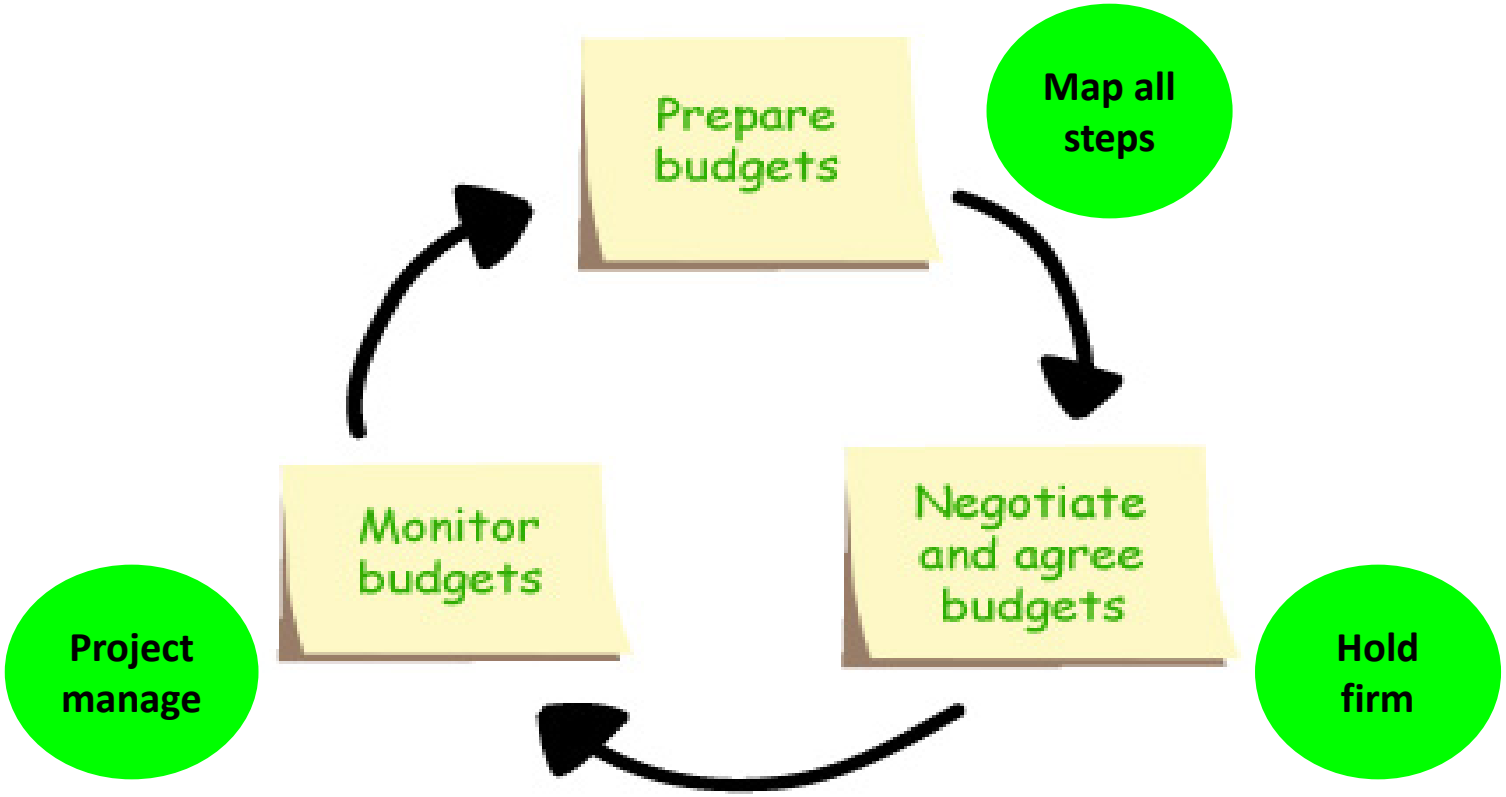
- To the FDA…
- To the IRB…
- To the NIH…
- To the trial sponsor
- To your department
- To OSP
- To your team members
- TO THE PATIENTS!

What happens when you go broke?

Budget Management IS Project Management

- A strong project management plan will keep you afloat fiscally
- Prevents or mitigates unanticipated problems

Your Budget Will Never Be Perfect- But You Can Perfectly Prepare for Shortfalls



Before You Start the Budget Planning for Your Trial Ask:

- Are the scientific value and ethical quality of the study acceptable?
- Would I enroll my mother in this study?
- Do I have an adequate pool of potential subjects?
- If from a company, does the proposed budget support the work described in the protocol?

- If the answer to any of these questions is no, <u>decline the trial</u>

Trial Costs

Study Period				Double-blind Treatment Period						
Visit		1	2	3	4	5	6	7	8	
PROCEDURES:	**Cost**	-21	-14	1	7	14	28	42	56	**Totals**
Informed Consent	**$75**	$75								$75
Inclusion/Exclusion Criteria	**$25**	$25	$25	$25						$75
Taper AntiHyp Meds	**$40**	$40								$40
Medical History	**$85**	$85								$85
Height/ Weight	**$15**			$15						15
Waist Circumference	**$15**			$15						$15
BP and Pulse	**$25**	$25	$25	$25	$25	$25	$25	$25	$25	$200
Screening PE	**$125**	$125								$125
Complete PE	**$175**			$175					$175	$350
EKG	**$63**	$63		$63					$63	$189
EKG Interpretation	**$37**	$37		$37					$37	$111
Collect Labs	**$25**	$25		$25			$25		$25	$100
Lab Interpretation	**$25**	$25		$25			$25		$25	$100
Pharmacogenetic Consent	**$25**			$25						$25
Adverse Events	**$20**		$20	$20	$20	$20	$20	$20	$20	$140
Concomitant Medications	**$15**	$15	$15	$15	$15	$15	$15	$15	$15	$120
Drug Accountability	**$25**			$25	$25	$25	$25	$25	$25	$150
IVRS	**$40**		$40	$40	$40				$40	$160
Screening Log	**$25**	$25								$25
Randomization	**$25**			$25						$25
Dispense Study Meds	**$20**		$20	$20	$20					$60
Echocardiagram	**$40**								$40	$40
Pt Reimbursement for Travel	**$25**	$25	$25	$25	$25	$25	$25	$25	$25	$200
Coordinator Fee:	**$60**	$60	$60	$60	$60	$60	$60	$60	$60	$480
Total per procedure		$650	$230	$660	$230	$170	$220	$170	$575	$2,905
Institutional overhead	26%	$169	$60	$172	$60	$44	$57	$44	$150	$755
Total w/ overhead		$819	$290	$832	$290	$214	$277	$214	$725	**$3,660**
								9	Patients:	**$32,942.70**

STUDY LEVEL COSTS:										
Screen Failures	Maximum of		**6**	Failures at		$1,108.80				$6,652.80
Electronic Data Capture Support	24	hours at		$40.00	per hour					$960.00
Advertising/Recruitment										$3,000.00
Study Initiation										$3,250.00
IRB Fee										$2,000.00
Unscheduled Visits	13	sits per patient, up to			9	patients at		$85.00	per visit	$9,945.00
Pharmacy Set Up Fee										$500.00
Storage Fee										$450.00
TOTAL INVOICED COSTS:										**$26,757.80**
								Total Requested		**$59,700.50**

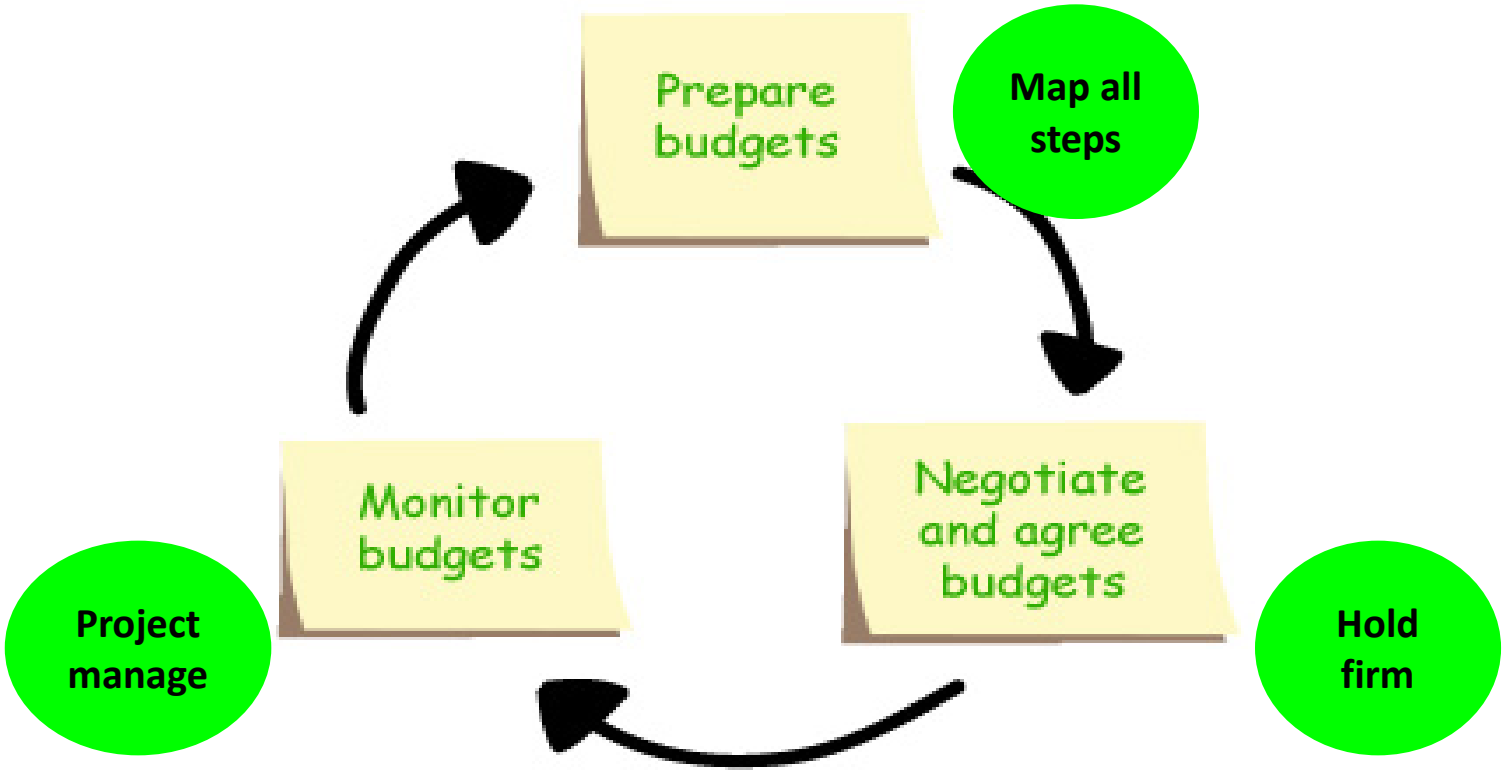
- Staff costs (estimated)
- Physician costs
- Clinical research unit
- Labs
- Imaging
- Drug delivery

X number of patient visits…

Are you Capturing Additional Costs?

- RC time for prep and attending sponsor monitoring visits (days)
- Time dealing with screen failures (4 or more screens for one patient)
- Start-up fees
- IRB/DSMB fees
- Electronic data capture (Redcap/CTMS)
- Investigational drug pharmacy, drug storage fees
- Time an administrator or the RC spends invoicing and billing
- Additional FTE: biostatistician, consultant
- Document translation fees
- Effort spent with PROTOCOL AMENDMENTS
- Anticipated trial enrollment delays

Your Budget Will Never Be Perfect - But You Can Perfectly Prepare for Shortfalls



Sponsor's Budget

- Compare with your budget
- Is the per subject cost equivalent?
- Is overhead accurately represented?
- Any missing items?
- Are costs at the study level comparable?
- Review
- Negotiate-be sure to provide flexibility for re-negotiation

Don't back down!!!!!!

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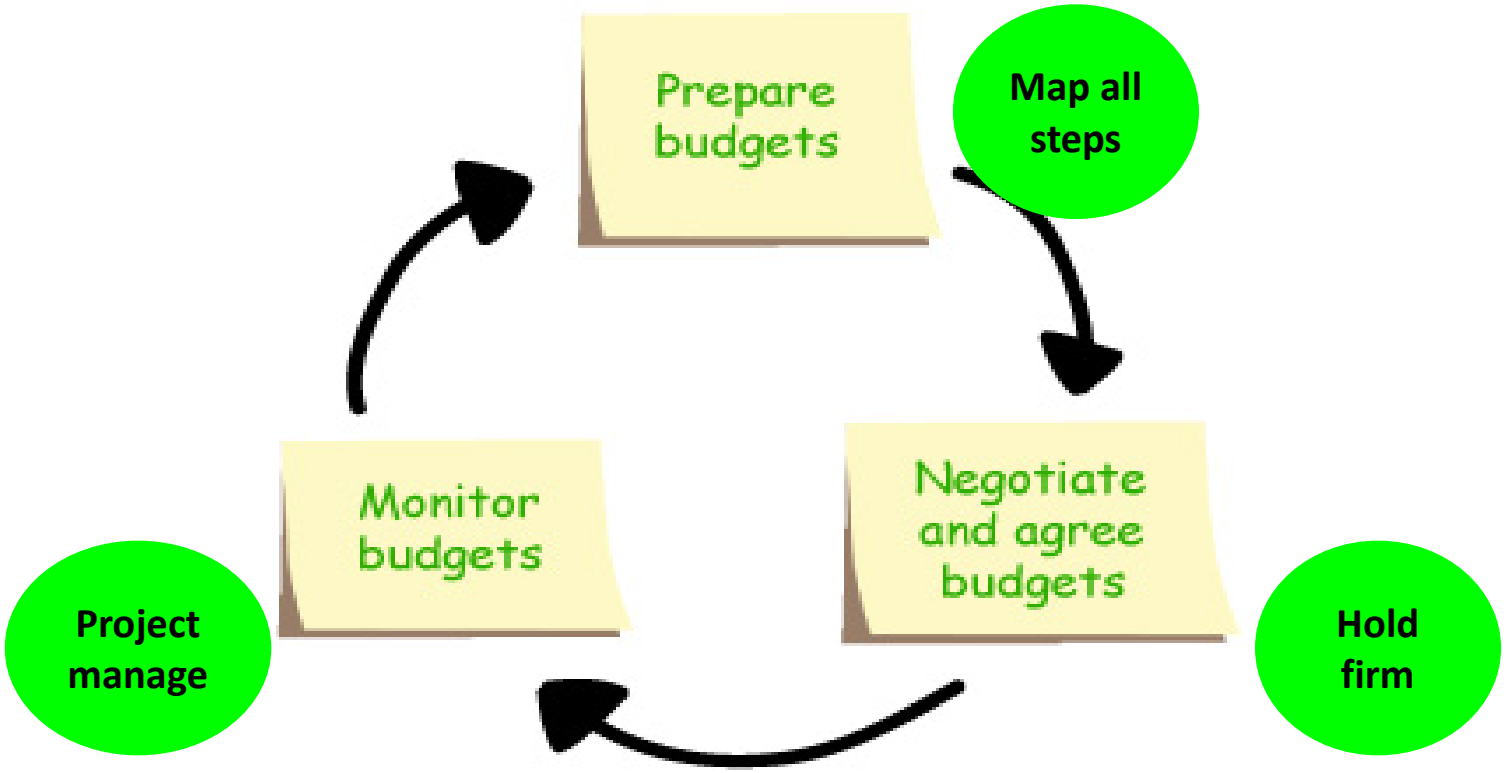
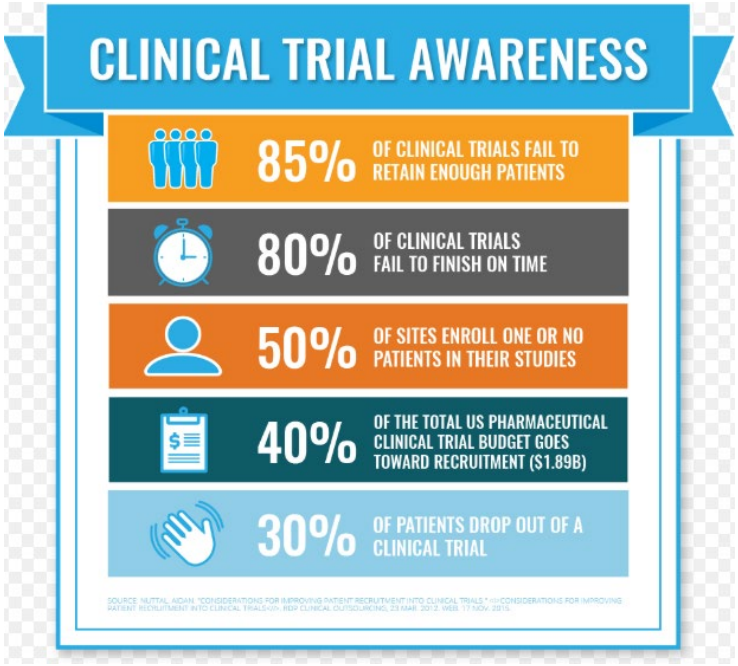


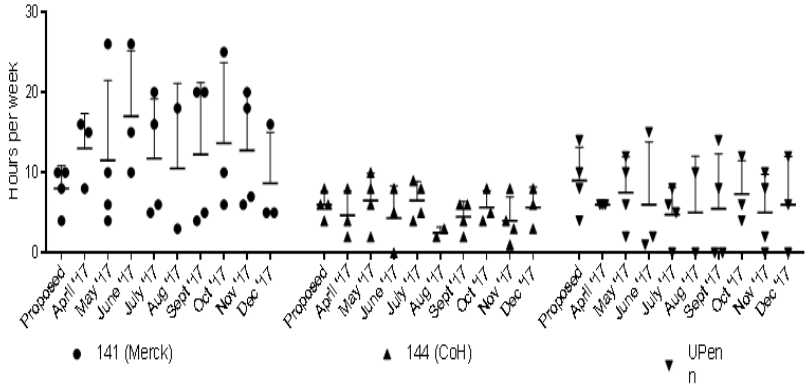
Your Budget Will NOT Be Accurate - But You Can Minimize Variance With Active Management

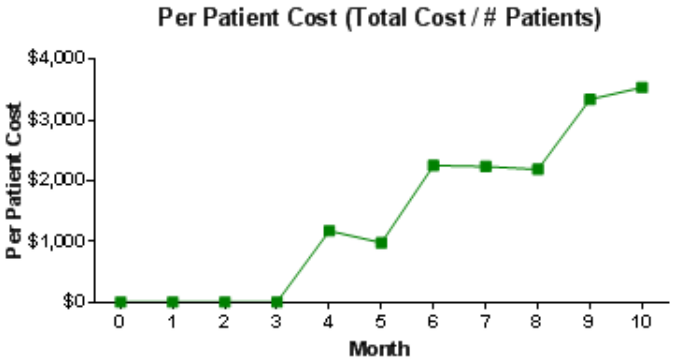


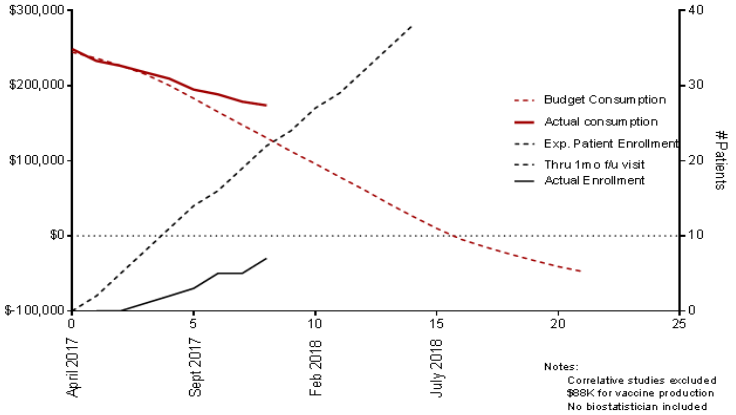
Make a Plan

- Use process mapping to make your budget
- Map budget to patient enrollment - better yet, use a budget tool!
- Remember- staff costs are the most often underestimated (keep track for a month)
- Outsource small projects or parts of projects - usually cheaper
- Decide what you can and cannot live with if you have to cut out parts of your protocol (never mess with the primary endpoint or number of patients enrolled)
- Negotiate with vendors
- Continuous monitoring and finding root cause of any variance

Lots of Different Ways to Manage Projects, Find What Works For You!

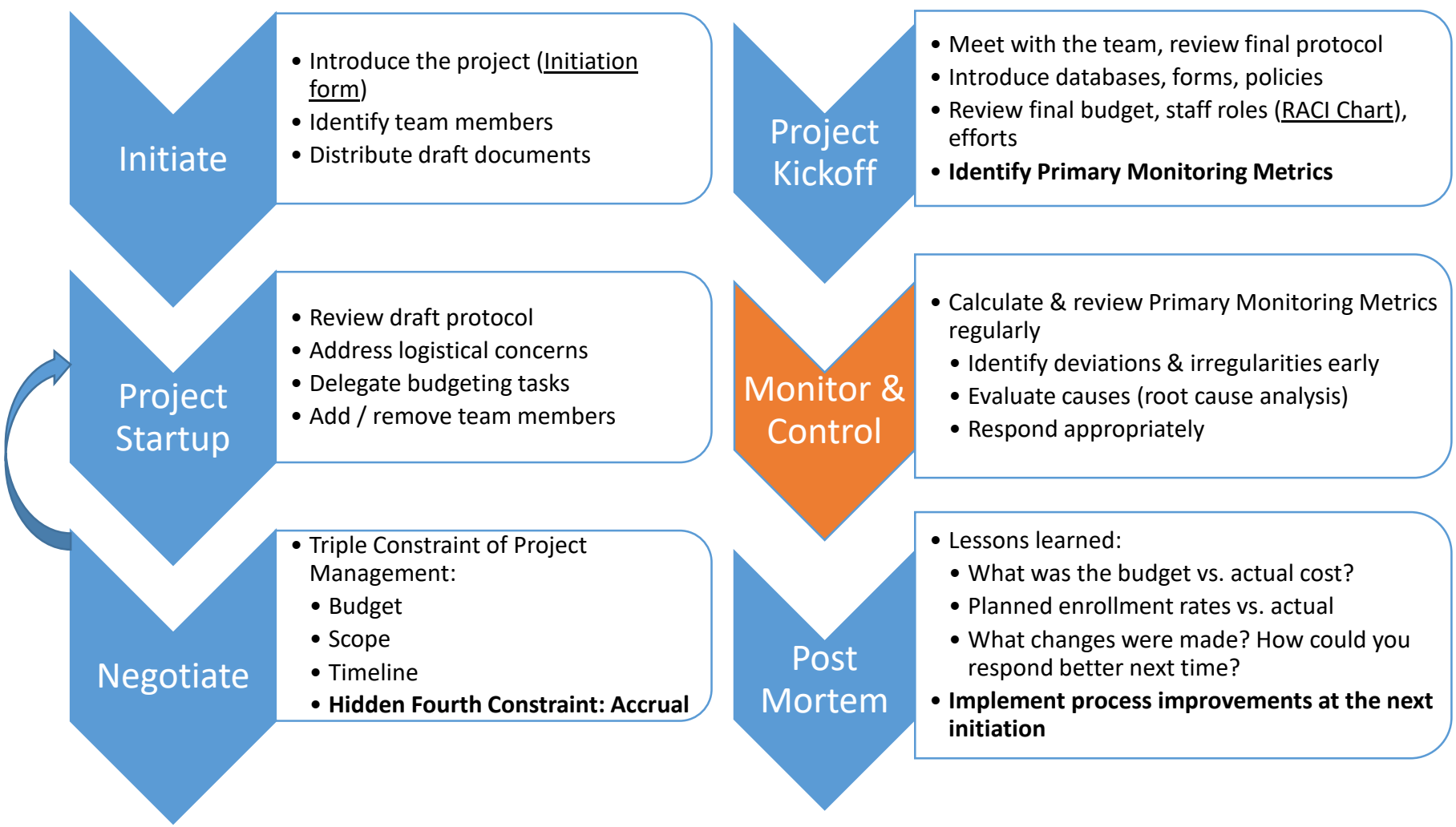






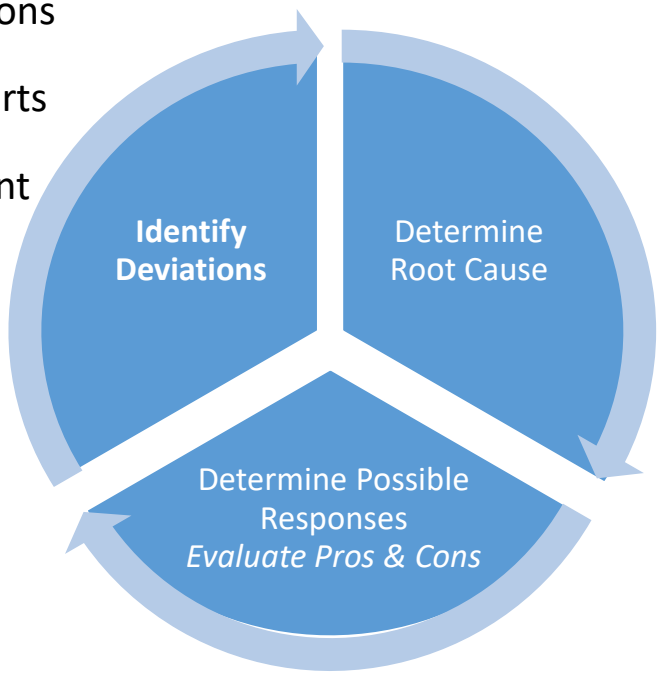
ACTIVITY

CVI Clinical Project Lifecycle



Clinical Budget Monitoring & Controlling

- Per Patient Cost Calculations
- Budget Consumption Charts
- Earned Value Management



Per Patient Cost Calculations: Example

- Phase I/II Trial of immune therapy drug X
- Patients with triple negative breast cancer
- Statistical Design: 25 patients
- Primary Objective Measures:
  - Progression free survival (PFS) as determined by CT scan every other visit
- Secondary Objective Measures:
  - PD-L1 expression of primary tumor by IHC
  - Serum expression of various markers
- 2.5 year (30mo) project with expected enrollment rate of 1 patient per month
- Historically, the CT scans & major patient costs hit the budget about 2 months after-the-fact

Per Patient Cost Calculations: Example

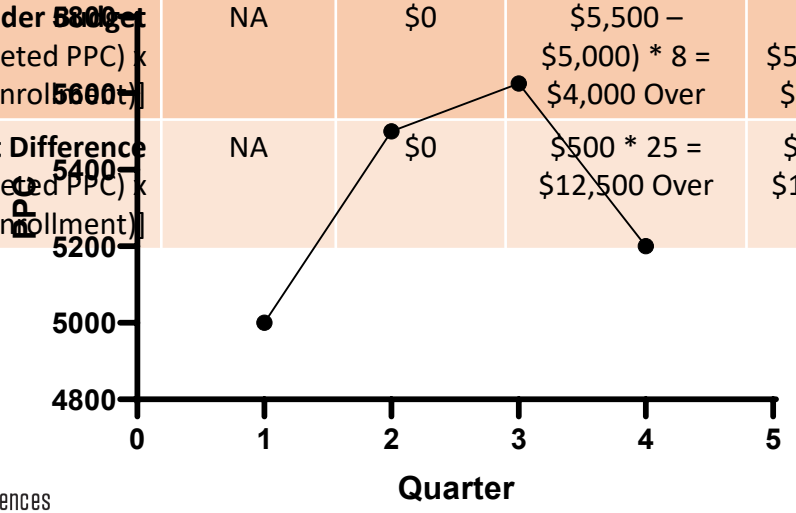
Cost Calculations	Month 2	Month 4	Month 6	Month 8	Month 10	Avg
Staffing Costs	**$20,000**	**$40,000**				
Total Patient Care Costs	**$0**	**$10,000**	**TBD**			
Actual Enrollment (of 25)	**2**	**5**				**1.25/mo**
Budgeted PPC			$5,000 per patient			
Planned Enrollment	2	4	6	8	10	1/mo
Actual PPC [Total Care Costs / Actual Enrollment]	NA	$5,000	TBD	TBD	TBD	--
Amount Over/Under Budget [(Actual PPC – Budgeted PPC) x Actual Enrollment)]	NA	$0	TBD	TBD	TBD	--
Projected Trial Cost Difference [(Actual PPC – Budgeted PPC) x Planned Enrollment)]	NA	$0	TBD	TBD	TBD	--

Per Patient Cost Calculations: Example

Cost Calculations	Month 2	Month 4	Month 6	Month 8	Month 10	Avg
Staffing Costs	**$20,000**	**$40,000**	**$60,000**			
Total Patient Care Costs	**$0**	**$10,000**	**$27,500**			
Actual Enrollment (of 25)	**2**	**5**	**8**			**1.33/mo**
Budgeted PPC	$5,000 per patient					
Planned Enrollment	2	4	6	8	10	1/mo
Actual PPC [Total Care Costs / Actual Enrollment]	NA	$5,000	$5,500	TBD	TBD	--
Amount Over/Under Budget [(Actual PPC – Budgeted PPC) x Actual Enrollment)]	NA	$0	$5,500 – $5,000) * 8 = $4,000 Over	TBD	TBD	--
Projected Trial Cost Difference [(Actual PPC – Budgeted PPC) x Planned Enrollment)]	NA	$0	$500 * 25 = $12,500 Over	TBD	TBD	--

Per Patient Cost Calculations: Example

Cost Calculations	Month 2	Month 4	Month 6	Month 8	Month 10	Avg
Staffing Costs	**$20,000**	**$40,000**	**$60,000**	**$80,000**	**$100,000**	
Total Patient Care Costs	**$0**	**$10,000**	**$27,500**	**$45,000**	**$62,400**	
Actual Enrollment (of 25)	**2**	**5**	**8**	**12**	**16**	**1.6/mo**
Budgeted PPC	$5,000 per patient					
Planned Enrollment	2	4	6	8	10	1/mo
Actual PPC [Total Care Costs / Actual Enrollment]	NA	$5,000	$5,500	$5,625	$5,200	--
Amount Over/Under Budget [(Actual PPC – Budgeted PPC) x Actual Enrollment)]	NA	$0	$5,500 – $5,000) * 8 = $4,000 Over	($5,625 – $5,000) * 12 = $7,500 Over	($5,200 – $5,000) * 16 = $3,200 Over	--
Projected Trial Cost Difference [(Actual PPC – Budgeted PPC) x Planned Enrollment)]	NA	$0	$500 * 25 = $12,500 Over	$625 * 25 = $15,625 Over	$200 * 25 = $5,000 Over	--



Per Patient Cost Calculations: Case Study

- Phase II Trial of Vaccine Y given with immune therapy Z
- Patients with platinum resistant ovarian cancer
- Statistical Design: 50 patients
- Primary Objective Measures:
  - Responses measured by PET at each visit, up to 6 times total per patient
  - Toxicity by patient reports (nurse to trains patients on self-reporting)
- Secondary Objective Measures:
  - Immune response to vaccine Y antigens by ELISPOT
  - IHC of tumor
- 3 year project (36mo) with full enrollment achieved within first 30mo
- Budget: $350,000 patient care costs, $360,000 salaries/benefits, & $150,000 for ELISPOT and IHC
- The clinic we are using is SLOW to invoice! Patient care costs are taking almost 3 full months to hit the budget.

Per Patient Cost Calculations: Case Study

Cost Calculations	Month 3	Month 6	Month 9	Month 12	Month 15	Avg
Staffing Costs	**$30,000**	**$60,000**	**$90,000**	**$120,000**	**$150,000**	**--**
Total Patient Care Costs	**$0**	**$9,000**	**$32,000**	**$42,500**	**$67,200**	**--**
Actual Enrollment (of 50)	**1**	**4**	**5**	**8**	**10**	**0.67/mo**
Budgeted PPC	$7,000 per patient					
Planned Enrollment	5	10	15	20	25	1.67/mo
Actual PPC [Total Care Costs / Actual Enrollment]						--
Amount Over/Under Budget [(Actual PPC – Budgeted PPC) x Actual Enrollment)]						--
Projected Trial Cost Difference [(Actual PPC – Budgeted PPC) x Planned Enrollment)]						--

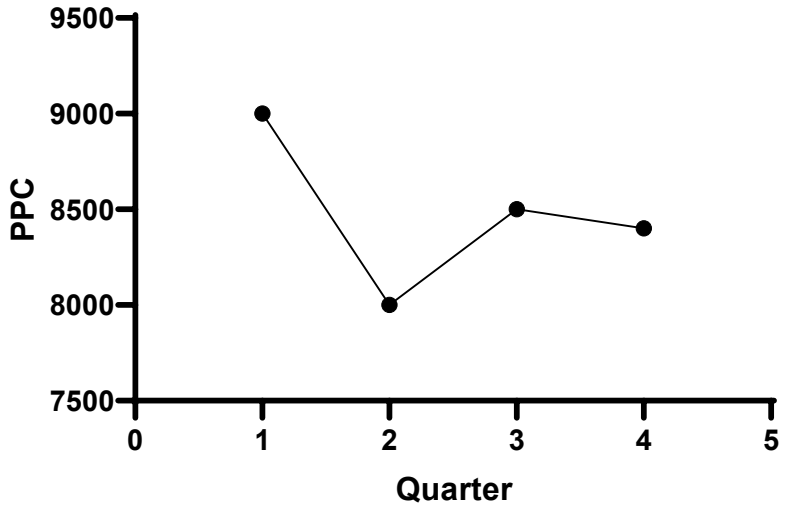
*Patient charges take, on average, 3 months to hit the budget

Per Patient Cost Calculations: Case Study Results

Cost Calculations	Month 3	Month 6	Month 9	Month 12	Month 15	Avg
Staffing Costs	**$30,000**	**$60,000**	**$90,000**	**$120,000**	**$150,000**	--
Total Patient Care Costs	**$0**	**$9,000**	**$32,000**	**$42,500**	**$67,200**	--
Actual Enrollment (of 50)	**1**	**4**	**5**	**8**	**10**	**0.67/mo**
Budgeted PPC	$7,000 per patient					
Planned Enrollment	5	10	15	20	25	1.67/mo
Actual PPC [Total Care Costs / Actual Enrollment]	TBD	$9,000	$8,000	$8,500	$8,400	--
Amount Over/Under Budget [(Actual PPC – Budgeted PPC) x Actual Enrollment)]	TBD	$2,000 * 4 = $8,000	$1,000 * 5 = $5,000	$1,500 * 8 = $12,000	$1,400 * 10 = $14,000	--
Projected Trial Cost Difference [(Actual PPC – Budgeted PPC) x Planned Enrollment)]	TBD	$2,000 * 50 = **$100,000**	$1,000 * 50 = **$50,000**	$1,500 * 50 = **$75,000**	$1,400 * 50 = **$70,000**	--

Assume that patient charges take, on average, 3 months to hit the budget

Per Patient Cost Calculations: Case Study Results



Considerations – and why they matter!

- Failure to consider delays in actual charges can lead to panic – or worse – failure to panic when necessary.
- Don't celebrate too early – and don't panic too late!
- Had we NOT considered the 3 month delay in the last case…

Cost Calculations	Month 6	Month 9	Month 12	Month 15	Month 30	Month 33
Staffing Costs	**$60,000**	**$90,000**	**$120,000**	**$150,000**	**$300,000**	**$330,000**
Total Patient Care Costs	**$9,000**	**$32,000**	**$42,500**	**$67,200**	**$360,000**	**$385,000**
Actual Enrollment (of 50)	**4**	**5**	**8**	**10**	**50**	**50**
Budgeted PPC	$7,000 per patient					
Planned Enrollment	10	15	20	25	50	50
Actual PPC	$2,250	$6,400	$5,313	$6,720	$7,200	$7,700
Amount Over/Under Budget	$-4,750 * 4 = $-19,000	$-600 * 5 = $-3,000	$-1,687 * 8 = $-13,496	$-280 * 10 = $-2,800	$200 * 50 = $10,000	$700 * 50 = $35,000
Projected Trial Cost Difference	$-4,750 * 50 = **$-237,000 UNDER**	$-600 * 50 = **$-30,000 UNDER**	$-1,687 * 50 = **$-84,350 UNDER**	$-280 * 50 = **$-14,000 UNDER**	**$10,000 OVER!** (now you have $140k for assay work)	**$35,000 OVER!** (now you have $115k for assay work… uh oh!)

Considerations – and why they matter!

- Case studies did not factor in the added complexity of STAFFING LEVELS.
  - Enrolling too slow? Staffing will need to increase or be covered for longer duration to complete enrollment
  - Enrolling faster than anticipated? Be sure your staff are covered for the extra work, and you aren't letting other grants "cover" for this trials work.
- Remember: Invoicing delays will vary from study to study – or may not exist at all! Don't worry if it takes a few months to figure out the pattern.

Clinical Budget Monitoring & Controlling

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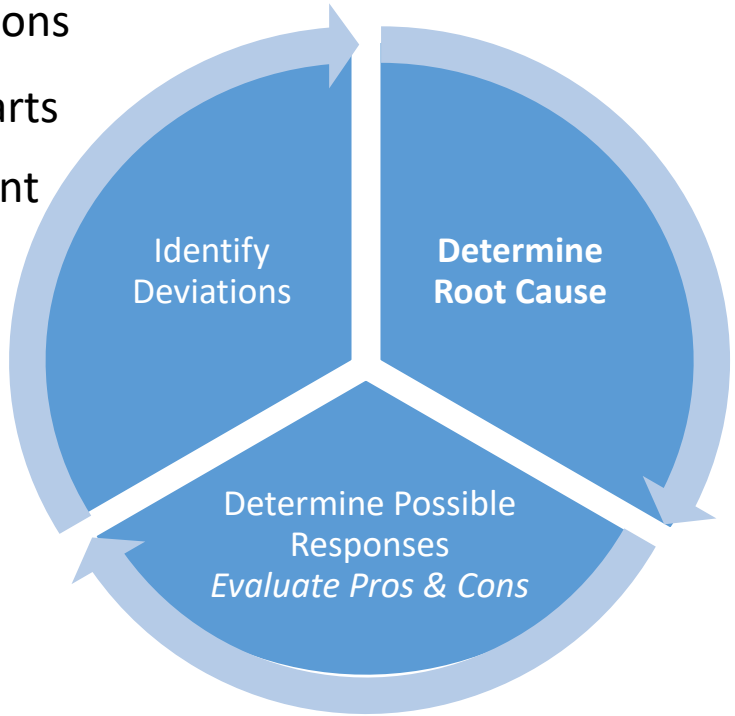

- **Project Team Brainstorming**
- **Direct comparison to budget**
- **Staff time tracking**
- **Enrollment Rates**

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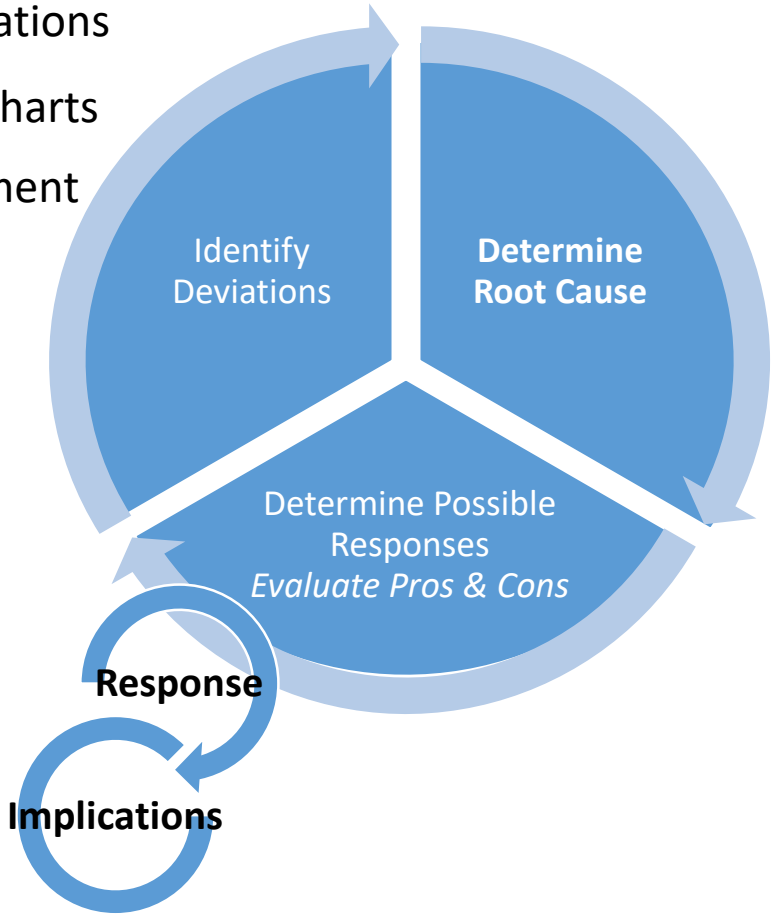

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Per Patient Cost Calculations: Case Study Results

Cost Calculations	Month 3	Month 6	Month 9	Month 12	Month 15	Avg
Staffing Costs	**$30,000**	**$60,000**	**$90,000**	**$120,000**	**$150,000**	--
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Actual Enrollment (of 50)	**1**	**4**	**5**	**8**	**10**	**0.67/mo**
Budgeted PPC	$7,000 per patient					
Planned Enrollment	5	10	15	20	25	1.67/mo
Actual PPC [Total Care Costs / Actual Enrollment]*	TBD	$9,000	$8,000	$8,500	$8,400	--
Amount Over/Under Budget [(Actual PPC – Budgeted PPC) x Actual Enrollment)]	TBD	$2,000 * 4 = $8,000	$1,000 * 5 = $5,000	$1,500 * 8 = $12,000	$1,400 * 10 = $14,000	--
Projected Trial Cost Difference [Patients remaining * (Actual PPC – Budgeted PPC) + Amount Over/Under Budget]	TBD	$2,000 * 46 + $8,000 = **$100,000**	$1,000 * 45 + $5,000 = **$50,000**	$1,500 * 42 + $12,000 = **$75,000**	$1,400 * 40 + $14,000 = **$70,000**	--

Assume that patient charges take, on average, 3 months to hit the budget

Brainstorm Responses / Pros & Cons

The situation:

It is the end of month 15. We are currently 20% enrolled, with 21mo left on the project. Upon comparing budgets to invoices, we discovered that the hospital where we run this trial has recently increased PET scan costs by $300 per scan. Further root-cause analysis also showed that we underestimated the cost of several other line items.

Our latest realized PPC of $8,400 seems to be rather accurate when comparing invoices (remember: our budgeted PPC was only $7000). Worse, we still have 40 more patients to enroll AND we are enrolling quite slowly.

As of today, we expect to be 70k overspent.

Brainstorm with your tables: What can we do?

Brainstorm Responses / Pros & Cons

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It is the end of month 15. We are currently 20% enrolled, with 21mo left on the project. Upon comparing budgets to invoices, we discovered that the hospital where we run this trial has recently increased PET scan costs by $300 per scan. Further root-cause analysis also showed that we underestimated the cost of several other line items.

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As of today, we expect to be 70k overspent.

Shout out your ideas – What can we do?

Response	Pros	Cons
Enroll fewer patients or do fewer scans	• We certainly won't overspend budget…	• Our trial is no longer powered, and primary measures of responses can't be changed • **Not a viable option**
Decrease staff efforts or cut staff from the project	• May be more fitting given actual enrollment rates are slower • Decreases overall spending each month	• Likely to result in over-worked staff / underpaid for the amount of work • Let's assume we decreased efforts by 60% ($6k/month savings). However, at 0.67 patients/mo x 21mo, we would only enroll about 14 more patients. • A 60% FTE decrease actually increases our overspending by another $30k, and ensures a >2x longer project period. Sponsor will likely never work with you again! • **Not a viable option**
Ask sponsor for more money	• Depending on contract type, this may be an option…	• You may never get another contract with this sponsor again! • Sponsor could pull the plug entirely, and your staff now has no job • **Not a viable option**
Dip into the $150k you have held for secondary endpoints or find cheaper assays	• You'll have extra funds to spend on patient care costs	• Possible you'll get less data in the end for your secondary time points. Consider whether or not to address this with the sponsor. • You still need to improve your enrollment rates – at this rate, you won't finish by month 36. • **Potentially improves outlook, but needs more. What about enrollment?**
Dip into the $150k you have held for secondary endpoints AND increase your staff efforts to speed up enrollment	• Enroll faster • More likely for you to finish on time	• You'll get less data in the end for your secondary time points. Consider whether or not to address this with the sponsor. • Your staff may not have any extra available time to give • **This is a good option.**
If appropriate: Modify eligibility criteria (simplify)	• Might improve enrollment rates • May simplify screening	• Amendments are a large cause of cost overruns • Consider combining this with rearranging or revising secondary endpoint • **This is a good option.**

Other Potential Problems (Relating to Budget)

Personnel Related Problems:

- Unbudgeted state mandated raises or merit raises
- Actual efforts mis-estimated: staff unavailable for high workloads

Trial Enrollment Problems:

- Concurrent/competing/co-located trials
- Limited patient population or overly restrictive enrollment criteria
- Anything that results in higher OR lower than anticipated enrollment rates

Institutional/Government Problems:

- Available research space
- Patient care cost/billing delays
- FDA clinical hold

Summary

- Determine **before starting** how you will monitor the budget. Develop tracking metrics: enrollment rates, staff efforts, per patient costs…
- Track metrics **regularly** (every other month). When you smell smoke…
- Decisions should not be made lightly! Talk to your project team in an open brainstorm session w/ pros & cons list before making changes.
- Remember: your stats and primary endpoints **cannot be changed** to fit your budget.
- Learn from it! Determine **what went wrong** (root cause analysis), how you responded, and whether you should have responded differently.